

CREATIVITY, COMPETENCE, AND EXCELLENCE
WORK ORGANIZATIONAL SCENARIO

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By
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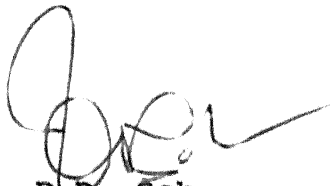
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PREFACE

Maximization of return to the organization by all means has been a matter of concern for persons who have cared about the organizational dynamics. Such maximization may be realized from two perspectives. One is immediate and the other is long term. The dynamics of the long run maximization would be different from the short run maximization.

Two approaches have had considerable impact on organizational thinking. One is the open system view point. This view regarding organizational functioning brought the salience of two concepts to the fore. They are the concepts of environment, and the internal flexibility in structure and processes that could enable the organization to synchronize optimal adjustments with the environmental dynamism.

The second view point is that of the human resource or humanistic management approach which emphasized on human contributions and the provision of opportunities for actualization of human potentialities within the organizational framework itself. Such emphasis was there in greater magnitude compared to the earlier human engineering and human relations approaches.

If one is permitted to combine the human resource perspective with the open system thinking then two things become apparent. One, that the maintenance of status quo

might be conducive to processes ultimately leading to entropy. Secondly, gearing up the human resource to successfully combat and win over the future environmental dynamism would be of utmost value.

Effectiveness may be regarded as a momentary concept. For growth in a future perspective, one of the requirements would be to surpass and keep on surpassing the momentarily existing standards of performance on a continuous basis. This is what would be termed as a thrust on excellence. "An excellent plumber is infinitely more admirable than an incompetent scientist. A society which scorns plumbing because it is a humble activity and tolerates shoddiness in science because it is an exalted activity will have neither good plumbing nor good science. Neither its pipe nor its theory will hold water" (Das, 1988, p. 5).

This work argues that a thrust on excellence preceded with creativity and competence could be one of the ways to ensure sustained effectiveness in face of dynamic environment. The construct of excellence has become a topic of concern relatively recently, however the other two concepts, creativity and competence, seem to have held ground in the literature for a reasonable period of time. However, apart from some variants of competence, the constructs of creativity and excellence seem to have drawn but little attention in terms of empirical exploration or validation

in work organizational setting. Since work organizations may have ramifications in overall societal growth, the setting assumes all the greater significance. This work is an attempt to empirically examine the constructs of creativity, competence, and excellence simultaneously in a social psychological and organizational behavior perspective, in work organizational setting.

In the absence of empirical findings that could be directly related to the present study, the study had been conducted in an exploratory rather than confirmatory framework. Therefore, so called theoretical expectations and preconceived hypotheses were dispensed with. Nevertheless, several research issues were visualized and the results did provide interesting and useful findings.

The literature review posed problem in that little material was available in the existing literature with regard to the main variables in organizational behavior perspective resulting in a seemingly inadequate review in case of certain variables. This could hardly have been helped. Further, in keeping with the traditional mode of presentation, the results and the discussion have been presented as separate chapters. However, in an exploratory study like the present one the results and discussion become so intertwined that one in the absence of the other assumes a certain degree of incompleteness in presentation. The

discussion part, thus, presents the broad major highlights of the results devoid of statistical coefficients. It is urged that considering the volume and intricacies of the statistical findings, the results chapter should cognitively be treated as an integral part of the discussion and the two chapter should be treated as subsections of one chapter that could have been labelled as "results and discussion". In other words, the results chapter itself should be studied with an eye to derive the meaning of the analyses. The readers are requested kindly to bear up on these accounts.

One frequently asked question in connection with this kind of work is that what does it mean to a lay person? Honestly the answer is, precious little. The author would only be too happy if a lay person could use this work. However, it is admitted with utmost humility that this work was never intended for lay persons. It is indended to be a groundwork for a dialogue with serious researchers with a fair degree of technical sophistication, for the simple reason that only an academically and methodologically sophisticated professional colleague could be expected to appreciate the strengths and limitations of the conceptual and analytical approaches employed in the study.

Collection of and interpretation of macro level data has always been a problem in this kind of a work and so has been the case with this study. Consequently, the data were

collected from the individuals and the pattern of relationships and interpretations should mostly confine to the individual level. Summated ratings on some measure may, however, be taken but only as reflective of the systemic phenomena.

Absolutely no claim is made toward generalizability of the findings of this study across the diverse populations of work organizations. At the same time, there does not seem to be any compelling reason to believe that the sample of this study would be completely nonrepresentative of the Indian work organizations. Therefore, to the extent it can be shown that a particular sample is comparable, in terms of the relevant parameters, to the sample of this study; one might be reasonably confident in assuming that the findings of this study would hold true in case of that sample also.

It is hoped that this work would be informative and useful to the academicians, professionals, and researchers in the area of organizational behavior and human resource management.

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List of Abbreviation

- AAPS. Analytical Approach to Problem solving
- ANAPS. Analogical Approach to Problem solving
- ANOVA. Analysis of Variance
- AO. Advancement Opportunity
- ARO(EWE & CE). Autonomy and Result Orientation
(in Extrawork Environment and Childhood Environment)
- AS. Autonomy in Supervision
- ASAPS. Associative Approach to Problem solving
- CA. Creative Abilities
- CC. Canonical Correlation
- CCT. Constraint of Change and Time
- CEF(OFJ). Creativity Fostering Environment
Off-the-Job
- CEF(ONJ). Creativity Fostering Environment
On-the-Job
- CPA. Courteous, Popular, and Altruistic
- CT. Competence Thema
- CTC. Constraint of Change
- D. Decentralization
- DCO. Desirable Characteristics of Organization
- DPC. Desirable Personal Characteristics
- DPS. Determined, Persistent, and Self-starter
- EF(EWE). External Facilitation in Extrawork
Environment

EPCI (PPE & PE). Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment)

ETR. Expertise Recognition

EXR. Excellence Recognition

FA. Feedback and Accomplishment

FBA(EWE). Freedom of Belief and Action (in Extrawork Environment)

FO(PPE). Feedback and Opportunity (in Preprofessional Environment)

FDT(PE). Freedom for Divergent Thought (in Professional Environment)

GC. Generalized Competence

II. Incubation and Illumination

IJS. Intrinsic Job Satisfaction

ILC. Internal Locus of Control

IV(PPE). Innovation Values (in Preprofessional Environment)

IWM. Informal Work Mechanism

JI. Job Involvement

LEFI. Leader Environment Follower Interaction

LHS. Left hand set

NCI. Nonconventional Ideation

NPLS. Nurturant Participant Leadership Style

NSA. Need for self-actualization

OAPS. Optimizing Approach to Problem solving

OE. Organizational Effectiveness

OEX. Output Excellence

OWAJ. Obedient, Willing to Accept Judgements

PD. Passion for Distinctiveness

PE. Personal Effectiveness

PI. Passion for Innovation

PSP(PE). Panalty for Shabby Performance (in
Professional Environment)

PTR. Personal Target Realization

QBR. Quiet, Bashful, and Reserved

QCEE. Quality Conscious Entreprenuerial Excellence

QWL. Quality of Work Life

RC. Canonical Correlation Coefficient

Rdx. Redundancy Index

RHS. Right hand set

rij(est.). Cronback's test length independent
index of Internal consistency

S. Seniority

SAA. Selection Attraction Attrition

SAPS. Synthesizing Approach to Problem solving

SC. Specialized Competence

SC(EWE). Stimulation for Creativity (in
Extrawork Environment)

SCP. Satisfaction with Company Policies
 SDF. Standardized Discriminant Function
 SE. Self-esteem
 SF. Second Order Factor
 SJS. Satisfaction with Job Situation
 SJSHO. Satisfaction with Job Security and

Helping Others

SV. Skills Variety
 TC. Time Constraint
 TI. Task Identity
 TS. Task Structure
 TY. Theory Y

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Synopsis

CREATIVITY, COMPETENCE, AND EXCELLENCE:
WORK ORGANIZATIONAL SCENARIO
A Thesis Submitted
In Partial Fulfilment of the Requirements for the
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The study focused on the constructs of creativity, competence, and excellence in work organizational setting. Some more variables were also included. These were person's environmental forces, biographical information, intrinsic motivation, locus of control, need for pioneering, need for self-actualization, personal characteristics, self-esteem, climate, hierarchical position, job characteristics, leadership styles, ownership, role clarity, role overload, task structure, theory Y, theory Z, organizational effectiveness, job satisfaction, and personal effectiveness.

Emphasis was on the exploration of structure and dynamics of creativity, competence, and excellence. Their antecedents, consequences, relationships, and variations were sought to be explored in terms of the additional variables mentioned above.

Work organizations do not exist in a static world.

Therefore a standardized rigid technical system would render an organization unworthy of survival unless the organization develops an adaptive system that goes beyond the maintenance system in solving the conflicts that arise between present organizational practices and future environmental demands.

One way to become and remain a leader even in face of future uncertainties is to focus on excellence. Excellence is broadly defined as surpassing the existing norms or standards in given contingencies with regard to time and situation. This work centres upon the construct of excellence, in conjugation with two other constructs, namely creativity and competence. Creativity may broadly be defined as materializing something which is novel and is useful in some sense for the consumption of some agency. Competence may be defined as the ability to get things done. However, there may be variations in the exact connotation of the shades of competence. For instance, perceived job competence would refer to a person's feeling and confidence about his or her abilities in mastering an organizational or work setting. Again, perceived job competence may be conceived of as having two more components, that is, generalized competence and specific competence.

The responses were to be obtained from individuals and therefore even some of those variables, such as

excellence and effectiveness, that should ideally have been operationalized as macro variables were transliterated as individual level variables. This was done due to the practical difficulties in obtaining real macro level data in a work like this. Summated ratings, however, might reflect the systemic properties.

Although the nature of the work was exploratory, several research issues were raised and could be answered to a reasonable extent; mainly, (a) the underlying dimensions of the variables in the study were uncovered, (b) the dimensions of creativity, competence, and excellence were related to the dimensions of the other variables in the study, and (c) the patterns of relationship of the variables with organization and person level outcomes were explored.

The sample consisted of 290 lower, middle, and upper level executives from six public and four private sector, a total of ten organizations. These organizations were located in Uttar Pradesh and covered the textile, engineering, and fertilizer industries. Data were collected through structured interview schedule. Data analyses techniques included factor analysis, canonical correlation, discriminant analysis, regression analysis, and analysis of variance.

The results suggested that creativity, competence, and excellence could be treated as variables of import in organizational dynamics. They do seem to have significant consequences at the individual level and presumably also at the organizational level. Further, the constructs of creativity, competence, and excellence may gainfully be understood in conjugation with the other variables in the study. In addition to process variables, the structural variables also seemed to be important; therefore intervention attempts should take into account the differences in terms of ownership of the organizations and the hierarchical levels of the role incumbents.

Some of the implications of the study are (a) that the knowledge regarding precise relationship among the various dimensions of creativity, competence, and excellence could gainfully be used under defined contingencies in terms of other variables or requirements; (b) that since the study could identify the variables that would discriminate between the high and low levels of the dimensions of creativity, competence, and excellence; this knowledge could prove to be rather useful to the personnel manager for diagnostic purposes in selection, placement, promotion, or dismissal of a role incumbent; and (c) that since the results identified the variables associated with more effective organizations and also work effectiveness as such the less effective organizations could benefit by utilizing this knowledge.

Chapter 1

Introduction

This work is regarding the structure and dynamics, and the possible antecedents and consequences of the three constructs called creativity, competence, and excellence.

Those concerned with the dynamics of modern social work organizations have dealt with the construct identified as effectiveness in great detail. It is only relatively recently that attention has been drawn to something which could be even beyond effectiveness. This has been termed as excellence. Devoid of details, excellence may be defined as surpassing of the standard of performance which either exists or is designed to be the norm by the dominant coalition.

Surpassing the stated standards of performance, by definition, involves deviating from the existing norms (mostly in a positive manner). Creativity is the construct that is postulated to help achieve this. Creativity may be defined as materializing something which is novel and is useful in some sense for the consumption of some agency.

It is important to note that creativity would involve materializing and not just ideating something novel. Therefore giving a complete shape to the novel idea in a form usable to some agency requires the ability to do so. Competence is the construct that is postulated to be instrumental in accomplishment of this goal. Competence may

be defined as an ability to interact effectively with the environment.

This work would focus on the constructs of creativity, competence, and excellence in the main. However, the variables that have either been shown or are postulated to have some relationship with these three major constructs, or may have to do with their structure and dynamics or antecedents and consequences; would also be dealt with. First, each of the three constructs would be taken up one by one. Their theoretical backgrounds will be presented, followed by descriptions of the empirical works done primarily in the area of organizational behavior taking that construct as a major variable. Subsequently, the other variables that have been postulated to have something to do with the major constructs will also be described in the same sequence; that is, first the theoretical background and next the empirical studies would be presented. Attempt would be made to remain confined to enunciation of the studies that have been executed mainly in the area of organizational behavior.

As it has been described earlier the variables of creativity, competence, and excellence were chosen to be major thrust variables on the basis of their importance in organizational behavior research paradigm. Apart from these three variables some more variables would be included. Selection of such variables would be on the basis of three

criteria confusion, novelty, and relevance. That is, in the context of organizational behavior in general and the variables creativity, competence, and excellence in particular, other variables would be selected if (a) the existing results do not reach to a definite conclusion i.e., there is confusion, (b) the particular variable has drawn little or no attention from researchers in the area of organizational behavior especially in the context of creativity, competence, and excellence, i.e., there is novelty in the variable, and (c) the variable could be thought of as relevant to the framework of this research on some consideration i.e., there is relevance. The variable of creativity would be taken up first.

Creativity: The Concept

Creativity in recent years has become an ideal of democratic living and institutions. Fueled by the writings of Maslow, Rogers, and other humanistic psychologists, this desire to stimulate creativity at all levels of society, including the work force, has taken form in encounter groups, T-groups, and other activities that fall somewhere between education and psychotherapy. The assumption behind these movements is that all people have creative potential. The problem for society is to develop methods for tapping and releasing this potential which usually include some means for converting authority from repressive to benevolent. This egalitarian thrust overlooks an important idea: that creativity

depends in large measure on the presence of individual talent (Zaleznick, 1988, p. 37). However, it is clear that in whatever area it may be, nurturance of creative potential, indeed is a necessity today. Organizational growth in the present context is highly dependent on to what extent the managers aspire to be creative, are sensitive to change, and willing to implement them.

Creativity is a multifaceted phenomena (Mackinnon, 1970). According to Webster (Webster's ninth new collegiate dictionary, 1987, p. 304) creativity is the ability to create something. Definitions of creativity range from its simplistic meaning such as that creativity is the simple problem solving (Newell, Shaw, & Simon, 1962) to the conception that it is the full realization and expression of individual's own potentialities (Maslow, 1954; Rogers, 1954). Broadly, the definitions of creativity could be classified into three categories (a) definitions in terms of person, (b) definitions in terms of process, and (c) definitions in terms of product.

Definitions in terms of person have generally focused on the person himself. They believe that there are certain specific qualities or abilities that make for creative individual (Barron, 1969; Golann, 1962; Guilford, 1950; Mackinnon, 1962; Maslow, 1954; Nicholls, 1972; Rogers, 1954; Torrance, 1965; etc.) According to Guilford (1950) creativity "in its narrow sense, refers to the abilities that are most characteristic of creative

people" (p. 444).

Definitions in terms of process focused on the process involved in producing something new (Koestler, 1964; Mednick, 1962; Newell et al., 1962; Stein, 1974; Taylor, 1964; Wallas, 1926; Wertheimer, 1945). Mednick (1962) defined process of creativity as the forming of associative elements into new combinations which either meet specified requirements or are in some way useful.

Definitions in terms of product or response include novelty, appropriateness, and originality as the distinguishing features of the creative outcome (Barron, 1955; Bruner, 1962; Newell, et al., 1962; Stein, 1974). Bruner (1962) conceived creative product as something that generates effective surprise in the observer and should be characterized by novelty and appropriateness. Barron (1955) stressed two criteria for judging the originality of the response, they were (a) uncommonness, and (b) adaptive to reality.

It appears from the above descriptions that creativeness would consist of at least three components (a) it would involve a novel and original response or idea, (b) it must be adaptive to reality, and should be used to accomplish some recognizable goal, and (c) it would involve sustaining of original insight, an evaluation and elaboration of it, and its development to the full. Following this viewpoint creative process could be thought to be characterized by originality, adaptiveness, and realization (Mackinnon, 1962).

Empirical research has long been dominated by the person approach to the definition of creativity (Nicholls, 1972), and attempts have been made to distinguish between creative and noncreative persons. As a result some of the important areas relevant to creativity phenomena have been virtually ignored. There has been a concentration on the personal characteristics of the creative persons to the neglect of the characteristics of creative situation i.e., the situation which is conducive to creativity. There has been narrow focus on intrapersonal determinants of creativity to the neglect of external determinants of creativity. Therefore it would be more appropriate to view creativity as a comprehensive concept resulting from a particular combination of personal characteristics, cognitive abilities, and the social environment (Amabile, 1983).

Teresa Amabile (1983) proposed a componential conceptual model of creativity. She emphasized three major components of creativity (a) domain relevant skills, (b) creativity relevant skills, and (c) task motivation.

Domain relevant skills could be considered as the ground work for any performance in any domain. This component comprises factual knowledge, technical skills, and special talents related to that specific domain in question. Creativity relevant skills include cognitive style, exploration of new cognitive pathways, working style, and some personal characteristics including high self-discipline and commitment

to work, strong independence of judgement, willingness to take risks and high level of tolerance for ambiguity. Task motivation includes the motivation variables. Amabile (1983) suggested that creativity increases when individual is intrinsically motivated towards the task. Extrinsic motivation on the other hand may dampen creativity. Having presented some of the representative viewpoints on the diverse aspects of creativity phenomena, we now turn to the conceptualizations of creativity in theoretical perspectives.

Theoretical Conceptualizations of Creativity

Psychoanalytic approach. Creativity has always been a controversial issue as far as the definition is concerned. While tracing the origin of this concept one could even find the term fantasy appearing in the writings of Freud (1908/1970) which could be thought to be some kind of an analogous reflection of creativity. In Freudian approach the subconscious has been regarded a source of creativity or fantasy. Fantasy could be defined as wishful thinking. According to Freud (1924/1968) unfulfilled desires or wishes are the sources of fantasy and the 'mechanisms of bias' (that is a shift of emphasis from one phenomenon to another and substitution of an unacceptable situation with a harmless one) and 'condensing mechanism' (which is a fusion of several images into one image), and symbols formation are revealed in any form of fantasy. This approach, however, did not present

a clear view about the process of creativity.

Associative or behavioristic approach. This approach primarily viewed creativity as something resulting from the creative process. Creative process involves the deliberate connection of two previously unrelated "matrices of thought" to produce something new (Koestler, 1964; Mednick, 1962). The more the individual has perceived or the more he has collected and the longer he has spent recombining its elements, the better is the chance for a greater number and more valuable combination of ideas (Welch, 1960, p. 142). Thus the originality of the response depends on the number of combinations the individual has experienced and accumulated for use in the cognitive repertoire.

Cognitive approach. Cognitive theorists are mainly concerned with the ways in which individuals gather and organize information from their environment. Therefore, according to cognitive psychologists creativity represents different ways of receiving and tackling information, and the different styles of combining information in seeking effective solution. Hence the cognitive approach to creativity focused on the extent to which highly creative people are prepared to take risks in their thinking, about their willingness to take in large quantities of the information, and about their ability to change their viewpoints quickly.

According to Bruner (1962) individuals try to take in maximum possible information from the environment and every bit of new information is seen not as a unique event, but it is received as an event having connection with past events. This process is known as 'data coding'. People from similar cultural background usually tend to code events in similar ways. But creative thinking requires capacity to make novel and unusual codings and the more unconnectedness the person perceives between the events, the more unusual data combinations he or she makes. This is referred to as width of categorizing. When the relationship between width of categorizing and creativity was empirically tested it was found that highly creative children scored higher on category width test (Wallach & Kogan, 1965). Another variable, which cognitive psychologists consider important for creative thinking, is cognitive styles. The characteristic way in which an individual goes about taking in information from the world is referred to as 'cognitive style' people whose cognitive style involves the least censoring of the information available in the external world are most likely to be creative thinkers (Cropley, cited in Vernon, 1970, pp. 122, 123).

Gestalt approach. Gestalt psychologists preferred the term creative thinking over creativity as such. According to them it is a problem solving situation in which the thinker grasps the essential features of a problem and their relation to a final solution which is characterized by novelty, unconventionality, persistence, and difficulty in problem formulation (Newell, et al., 1962). Gestaltists were mainly concerned with perceptive, mnemonic, and intellectual phenomena. Wertheimer (1959) emphasized that in course of thinking the person apprehends the peculiarities of the structure and the demands of a problem situation which cause him or her to change the situation toward its improvement. The Gestaltists interpreted the dynamics of creativity as particular cases of the laws of the perceptive field, as a shift from a situation characterized by the presence of structural tension to a situation characterized by a structural harmony. This shift is reflected by the dynamics of psychic field, referred to as the 'Pragnanz principle'. Later Gestaltists asserted that the field itself is striving for simplicity and clarity. Thus the process of creativity could be thought of as a self regulatory process.

Humanistic approach. This approach takes into account the importance of person and the materials, events, people or circumstances (under which the creative product takes the final shape) at the same time. According to Rogers (1954)

creativity occurs when three internal psychological conditions are present (a) openness to experiences, (b) an internal locus of evaluation, and (c) the ability to toy with the elements and concepts. These three internal conditions are fostered by the two external conditions i.e., psychological safety and psychological freedom. The motivational propensity behind the creative act, according to Rogers, is the person's tendency to actualize himself, to become his potentialities. Creativeness, according to Maslow (1954), is a problem of creative person rather than of creative products and creative behaviors. It is the transformation of the character, the fuller development of the whole person or self-actualization. Maslow found all self-actualizing persons to be creative in one sense or the other.

Psychometric approach. Creativity has been operationally defined in terms of divergent thinking in most of the empirical studies. Guilford (1956) proposed structure of the intellect model. Based on this model and factor analytic approach Guilford and his colleagues have identified various abilities (i.e., fluency, flexibility, originality, redefinition, and elaboration). These abilities taken together have been labelled as divergent thinking. Several tests have been developed to measure divergent thinking (Berger & Guilford, 1969; Christensen, Guilford, Merrifield, & Wilson, 1960; Getzels & Jackson, 1962; Gough, 1975; Lawshe & Harris, 1960; Mednick, & Mednick, 1967; Torrance, 1974; Wallach & Kogan, 1965). These

tests require multitude of responses instead of one single correct answer (as required in intelligence tests). Some of the most recent reviews on measurement of creativity have reviewed these tests in detail (Hocevar, 1981; Treffinger, Renjulli, & Feldhusan, 1971).

Guilford (1959/1970) gave a brief survey of the known primary traits believed to be related to creativity that were found in factor analysis. The survey included both aptitude and non-aptitude traits, among the latter being traits of temperament and of motivation. Secondly he pointed out what seems to be the place of the aptitude for creativity within the general framework of intellect. He also made some predictions concerning undiscovered aptitudes for creative thinking. Thirdly, some relationships of the factors of creativity to evaluations of creative performance other than those in the aptitude test category were mentioned to indicate that the factors of creativity do have some support from other sources including evaluations of everyday life performances. The aptitude traits included factors like word fluency (ability to produce words each containing a specified letter or combination of letters), associational fluency (production of maximum number of synonyms for a given word in a limited time), expressional fluency (the rapidity of production for phrases or sentences), ideational fluency (production of ideas to fulfil certain requirements in a limited time), spontaneous

flexibility (the ability of ideas, with freedom from inertia or from preservation), adaptive flexibility (a type of flexibility of thinking that requires a most unusual type of solution in situations where the problem on the surface appears to be soluble by conventional methods which don't actually work), originality (unusualness of the responses, also indicated by remoteness of associations or relationship either in sense of time or logic, or responses that could be judged as being clever), redefinition (ability to give up old interpretation of old familiar objects in order to use them or their parts in some new ways), and elaboration (construction of complex ideas or objects on a supply of plain and simple foundation).

The non-aptitude traits related to creativity according to Guilford would be related to the kinds of thinking including reflective thinking, rigorous thinking, and autistic thinking. Other traits of non-aptitude variety would include esthetic appreciation, esthetic expression, tolerance for ambiguity, convergent thinking, and divergent thinking. Guilford (1956, 1957) after considering the known factors that could be regarded as belonging to the intellectual category proposed a system that he called a structure of intellect. As a response to question regarding the relationship between creativity and intelligence, Guilford contended that creative thinking abilities find logical places within the system called structure of the intellect. The aptitude traits that seemed

to be belonging to the area of creativity included factors of fluency and flexibility of thinking, as well as originality, sensitivity to problems, redefinition, and elaboration.

Regarding the non-aptitude traits a number of relationships between certain non-aptitude traits and creative performance in tests have been indicated. The two forms of flexibility of thinking seem clearly to be opposites to two forms of rigidity in thinking. Redefinition seems logically opposite to the quality of known as 'functional fixedness'. Other traits of temperament and of motivation seem to bear small relationships to performances in tests of fluency, flexibility, and particularly tests of originality (p. 136). Guilford emphasized searching activities with freedom to go in different direction and adaptive flexibility and originality as some of the factors conducive to creativity.

It may be noted that Guilford did make an important contribution by attempting a conceptualization of creativity phenomena on sound statistical and methodological foundations. However, it would be apparent that at places, Guilford did not maintain the distinction between thinking process and ability aspects of creativity. Technically ability may be conceptualized as having an identity separate from thinking process. As would be described shortly, this research subscribed to a stand that differentiated between the thinking process and the ability aspects of creativity phenomena.

Attempting a Synthesis of Theoretical Approaches to Creativity

A perusal of the descriptions of the construct of creativity mentioned so far should make apparent the proliferation of diversity and confusion in place of assimilation that marks the thinking and research on this construct. Creativity, according to the present investigator, is an identifiable construct that consists of the elements of idea, ability, action, and conclusion of an undertaking which is new and useful in any sense to any agency. The entire sequence from conception to conclusion of an iota of creativity would, at minimum, consist of first thinking and then putting that thought into action culminating in accomplishment that would require some special kind of abilities. Therefore this whole process could be labelled as the process of creativity, consisting of two major components (a) creative thinking process, and (b) creative abilities. Granting that various scholars have taken up threads of different component of the process of creativity, at times generating different patterns of this construct; the present investigator felt that the lines of demarcation among various subconstructs or subprocesses of the creativity phenomena were too thin. Therefore it was proposed to conceive of the process of creativity as having the components of (a) the creative thinking process and (b) the creative abilities. Taken together, these two should

represent the entire process of creativity in a representative way. The components as conceptualized in this research are detailed below.

The creative thinking process: convergent and divergent thinking. Convergent thinking refers to the thinking in which the thinker grasps information relevant to a problem and then proceeds by reasoning to arrive at the one best solution; involved in solving a problem with a single correct answer. Divergent thinking involves a wide variety of ideas, solutions, or responses that are allowed to come to mind.

Most of the studies have used tests of divergent thinking process as the index of creativity (e.g., Burt, 1962; Domino, 1974; Guilford, 1984; Harrington, 1975; Harrington, Block, & Block, 1983; Plass, Michael, & Michael, 1974; Runco, 1984, 1985, 1986, etc.). In contrast the convergent thinking process was thought to be related more to the index of intelligence, rather than creativity. As a result, both thinking processes have been treated orthogonal to each other. Creativity is a multidimensional phenomena. Its process involves cycles of convergent and divergent thinking (Khandwalla, 1984). Cropley (1966) empirically tested the relationship of convergent and divergent thinking tests and found, through factor analysis, that it was almost impossible to obtain a factor of divergent thinking that did not have high loadings of convergent thinking tests' items. He further concluded that it would be wrong to

argue either that convergent thinking and divergent thinking cannot be distinguished from each other factorially or that they are completely independent of each other (Crompton, 1966). Fee (1968) has also found the same and concluded that process of creativity is not unidimensional.

The process of creativity consists of four different stages preparation, incubation, illumination, and verification (Wallas, 1926). Helmholtz (cited in Whiting, 1959) described the process of creativity consisting of three stages i.e., saturation (gathering facts), incubation (considering material in new combination), and illumination (glimpses of the solution). Wallas (1926) added the fourth stage, namely verification. Stein (1974) postulated three stages of creative process (a) hypothesis formation, (b) hypothesis testing, and (c) hypothesis verification or communication. Hogarth (1980) proposed four stages (a) preparation, (b) production, (c) evaluation, and (d) implementation.

So far we have been dealing with the construct of creativity as a thinking process. Thinking process is characterized by any covert cognitive or mental manipulation of ideas, images, symbols, words, propositions, memories, concepts, percepts, beliefs or intentions. The common element in a thinking process is that it is a term reserved for symbolic processes and is not used for behaviors explicable by simpler

processes. This term also implies an implicit process that is not directly observable, and a manipulation of components at ideational level only. We now turn to the ability component of the process of creativity.

The creative abilities. The creative ability is differentiated from the thinking component in that it represents the qualities, power, competence, faculties, proficiencies, dexterities, talents etc. that enable one to perform a particular feat at a specified time. The essence of the term is that the person can perform this task now, no further training is needed. Ability is an individual's potential to perform (Reber, 1985, p. 1).

The major abilities that have been found to be useful in creativity are (a) the ability to ideate copiously (fluency), (b) the ability to come up with the variety of perspectives, approaches, and solutions (flexibility), (c) the ability to hit upon novel, uncommon solutions or relationships that are useful (originality), (d) the ability to grasp the causes and consequences of a situation, (e) the ability to elaborate on a creative insight, and (f) the ability to redefine problems to which Khandwalla (1984) referred to as the "armoury of creativity". The roots of these ideas could be traced back in history again to Guilford (1959/1970).

We now turn to the second construct, namely competence that is postulated to form an important component of the creativity, competence, and excellence cluster of variables.

Competence: The Concept

The construct of competence has long been an issue of controversy amongst psychologists. Neither there is a consensus on the meaning of competence nor agreement on its behavioral correlates. However, literature reveals at least one common feature in most of the conceptualizations of competence, that is, it is viewed as an ability, capacity, or skill to perform a specific task. According to Reber (1985, p. 137) competence means ability to perform some task or accomplish something. The suggested synonyms of competence include ability, capability, capacity, efficiency, proficiency, competency, skill, expertise etc. (McLeod, 1986, p. 83). The concept of competence in its commonsense meaning includes a satisfactory degree of ability to perform certain implied kind of tasks.

Theoretical Conceptualizations of Competence

Probably it was White (1959), who for the first time made a clear conceptual reference to competence in his concept of effectance motivation, but competence had had theoretical background of a long standing. Researchers and theorists have long been pointing out that there is a tendency or need in human beings to explore, and to produce effects over the environment (Berlyne, 1950; Erikson, 1952; Groos, 1901; Harlow, 1952; Hendrick, 1942, 1943; Montgomery, 1954; Myers & Miller, 1954; Piaget, 1952, etc.). This need was termed differently by some other theorists, for example as exploratory drive

(Angyal, 1958; Nissen, 1930), curiosity drive (Berlyne, 1954; Shand, 1914), Mastery drive (Hendrick, 1942), and manipulatory drive (Diamond, 1939; Harlow, Harlow, & Meyer, 1950). Piaget's (1952) theory of cognitive development did not take into account the concept of competence as such, but the implication of the theory suggests that seeking out, exploring, and problem solving could be considered inseparable from the adaptation to reality. Similarly, Erikson's (1952) fourth stage of development of personality, characterized by 'sense of industry', means refinement and development of skills in the gross motor, fine motor, and intellectual spheres. Hendrick (1943) postulated an instinct to master. Foote and Cottrell (1955) defined competence as capabilities to meet and to deal with a changing world to formulate ends and implement them.

White (1959) in his classic article proposed synthesis of all the above described propositions about competence. He postulated "effectance motivation" to mean that there is a biological drive or urge in all human beings to influence and to master their environments. This effectance motivation according to White (1959, 1963) manifested in exploration, curiosity, mastery, and the seeking of an optimum level of stimulation. The significance of effectance motivation is to develop an individual's competence. Later White (1963) proposed the term 'sense of competence'. It represents the subjective feelings of the individual resulting from the

interactions with his environment. The term sense of competence may be referred to as the generalized belief in one's own ability to deal effectively with his or her surrounding (Felson, 1984; Sekaran & Wagner, 1980). White believed these subjective feelings of competence to be based on the feelings of efficacies and inefficacies. Feelings of efficacies and inefficacies are developed as a result of past experiences of failures and successes. According to Bandura (1982) "self efficacies are the judgements about how well one can organize and execute courses of action required to deal with prospective situations containing many ambiguous, unpredictable and often unsuccessful elements" (p. 123). White's concept a sense of competence or effectance motivation undoubtedly provide a strong basis for theorizing the concept but at the same time his theorization lacks operational definition of competence.

Harter (1973) proposed that effectance motivation includes several components: cognitive, interpersonal, and motor competence, and these competence give rise to the feelings of efficacy. Bandura (1982) viewed competence as a generative capability in which component skills must be selected and organized into integrated courses of action to manage the changing task demands. These definitions (Bandura, 1982; Harter, 1978) have provided some insight about the various domains of competence.

Apart from the theoretical background, many researchers have proposed several types of competence, under different labels such as fundamental competence, interpersonal competence, social competence, managerial competence, technical competence etc. Broadly all these labels could be classified in two categories. (a) Functional or technical competence and (b) interpersonal or social competence (Argyris, 1962). Functional competence includes different skills such as technical, intellectual, and rational skills to perform specific tasks. These could be considered to be a prerequisite to perform any given set of task. Interpersonal competence is the possession of the capability to generate skilled behavior directed toward a goal (Trowler, 1982). Interpersonal competence refers to those psychological processes that enable a person to achieve specific interpersonal objectives. Argyle (1980) defines social competence as the "possession of the necessary skills to produce the desired effects on other people in social situation" (p. 207).

Operationalizations of Competence

Most of the research on competence had been by the researchers who were interested in the developmental aspect of the competence. Generally they have focused on the biological and the cultural influences on the construct "competence" (Harter, 1978; Yarrow, 1981). Their primary concern was to study the development of motivation to master a situation or

skill (mastery motivation) during the period from infancy to later childhood. Consequently several scales and indexes, measuring competence for infants have been evolved.

Personal efficacy a variant of competence, has been defined as the ability to control and create events which contributes to the feelings of accomplishment, self-esteem, and growth (Bharadwaj & Wilkening, 1980). The concept of personal efficacy as mentioned by Bharadwaj and Wilkening (1980), is related to the concepts of competence motivation (White, 1959), internal locus of control (Rottor, 1966), achievement motivation (McClelland, Atkinson, Clark, & Lowell, 1953), self-actualization (Maslow, 1954), personal causation (de Charms, 1968), and intrinsic motivation (Deci, 1975). It is an opposite of the sense of powerlessness. All the above mentioned concepts have, in common, focused on the involvement of self in active interactions with the environment.

As available research literature indicated, little research on job competence has been conducted. Wagner and Morse (1975) probably for the first time attempted to study competence on a managerial sample. They have constructed a paper pencil scale of "sense of competence". Recently some researchers have shown their interest in competence in work or job context (Boyatzis, 1982; Betz & Hackelt, 1981; Hill, 1984; Sakaran & Wagner, 1980). Boyatzis (1982) differentiated between competencies and threshold competency. He defined competencies as the

"characteristics that causally related to effected and/or superior performance in a job A threshold competency is a person's generic knowledge, motive, trait, self-image, social role, or skill which is essential to performing a job, but is not causally related to superior job performance" (p. 23). Hill (1984) postulated that competence is the ability to get things done.

The present research also focused on job competence. Competence has been conceptualized in the context of ability. Ability, at times (for example in case of intelligence as conceptualized by Spearman, 1904) has been thought to be consisting of two varieties, namely general and specific. Although no empirical evidence in the knowledge of the present author exists to justify the existence of a similar dichotomy in case of competence, i.e., general and specific context in so far as competence may not be thought of as synonymous to intelligence. However, intuitively the author felt a need to demarcate between what would be termed as the generalized competence and the specific competence. Generalized competence would mean some kind of a common factor that reflects in all or most of the task related activities whereas the specific competence would connote a competence of relatively higher magnitude in fewer or selected areas of task related operations. The term operations is used to include both the behavioral as well as cognitive performances.

Considering the existing literature on competence, the variable job competence was included to see its relationship with the other variables in the paradigm. The term "perceived job competence" used in this study would refer to a person's feeling and confidence about his or her abilities in mastering an organizational or work setting. It would reflect person's capability for what he or she can do, not necessarily what he or she does. Construct of job competence relates to overall job situation. However, as mentioned earlier two more indexes of competence would be included, namely generalized competence and specific competence. Conceptually the idea is that job competence could consist of two subdivisions. Thus three measures of competence (to be described in the method section) would be included in this study with a view to measure (a) perceived job competence, (b) generalized competence, and (c) specific competence.

We now switch over to last of the three thrust variables in the study, namely excellence.

Excellence: The Concept and its Operationalizations

The term excellence connotes distinctions, eminence, fineness, goodness, greatness, high quality, merit, perfection, pre-eminence, purity, superiority, supremacy, transcendence, virtue, worth; and excellent connotes admirable, distinguished, estimable, exemplary, meritorious, notable, noted, outstanding,

and worthy (McLeod, 1986, p. 174). In simplistic terms excellence would mean a deviation on the positive side from the norm with regard to any situation and time specific conceivable entity. Thus surpassing the existing norms or standards in given contingencies with regard to time and situation would be labelled as excellence. At a very superficial level excellence would mean a composite of all the virtues the existing magnitudes of which have been surpassed. However, it may not be difficult to see that there could be various dimensions of human cognition and endeavor, the standards of which could exist, and at least theoretically could also be surpassed. Gardner (1967), the president of the Carnegie Foundation and one of the early writers on the concept of excellence was, quick to see that "there are many varieties of excellence In the intellectual field alone there are many kinds of excellence. And there is an excellence in art, in music, in craftsmanship, in human relations, in technical work, in leadership, in parental responsibilities.... There are types of excellence that involve doing something well and types that involve being a certain kind of person. There is a way of measuring excellence that involves comparison between people--some are musical geniuses and some are not; and there is another that involves comparison between myself at my best and myself at my worst. It is this latter comparison which enables me to assert that I am being true to the best that is

in me - or forces me to confess that I am not" (Gardner, 1967, pp. 127-128). The idea basic to the construct of excellence is accomplishment of more than what already exists. In fact, that also is the essence of progress. The world would grind to a halt unless the human and material components in unison strive to progress. Call it progress or by any other name the assumptions that are implicit include the constructs of creative ideation and behavior, a reserve of competence, and accomplishment of innovative entities. "But excellence implies more than competence. It implies a striving for the highest standards in every phase of life. We need individual excellence in all its forms in every kind of creative endeavor, in political life, in education, in industry - in short, universally" (Gardner, 1967, p. 160). Here we find a view point that in a way presupposes competence and creative endeavor before excellence and emphasizes the need for individual excellence in various forms.

Given that excellence, defined as surpassing the existing standards, is desirable for progress, it would be worthwhile to seek a translation of this construct in the realm of organizational behavior. It should not be hard to see that the existing standards of performance is a variable having linkages to situation and time specific contingencies and therefore ideally, instead of adopting a rigid criteria for judging excellence, it is recommended that the excellence of

an organization should be measured against its own unique standards (Hickman & Silva, 1985, p. 23). It is noteworthy that most of the organization research focuses on either efficiency (which is a parsimonious input output ratio) or effectiveness (which is maximization of return to the organization by all means; or efficiency combined with the indicators of organizational, and individual members' well being). It needs to be pointed out that the concept of efficiency, and to some extent effectiveness also have had the existing standards of performance (of course with some reference point) as the criterion against which the organizational dynamics would usually be evaluated.

Surpassing the existing standards or looking for excellence has relatively been a new thrust in the area of organizational behavior. The credit for popularizing the concept in organizational perspective should genuinely go to Peters and Austin (1986) and Peters and Waterman (1982). Peters and Waterman jr. (1982) in their book, *In Search of Excellence*, simply said "stay close to your customers; wander around" (Peters & Austin, 1986, p. xi). However, this simple wisdom was a result of a close scrutiny of a number of "excellent" organizations. The excellence of these organizations was gauged against the six objective criteria (of excellence). The criteria were compound asset growth; compound equity growth; average ratio of market to book value; average return on total

capital; average return on equity; and average return on sales (pp. 22, 23). The excellent organizations identified against these seemingly more objective criteria also seem to be sharing few other attributes which are usually considered to be less objective, nevertheless they are of substantial value from the behavioral science perspective. These organizations appeared to be sharing the following eight attributes.

1. Bias for action. The excellent companies seemed to have a bias for action rather than a bias for perfect analysis of the problem before arriving at assumingly perfect solution. In several of such companies the standard operating procedure seemed to be "do it, fix it, try it" (p. 13). The spirit of this strategy is captured by the Harvard psychologist Jerome Bruner when he says "you more likely act yourself into feeling than feel yourself into action" (p. 73).

2. Close to the customer. These companies learn from the people they served and provide unparalleled quality, service and reliability - things that work and last (p. 14). Johnson and Johnson companies' motto is, in effect, if you can't understand the customers, you won't understand the business (p. 170). The answer how much service is enough or what kind of quality is right lies in the marketplace (p. 170).

3. Autonomy and entrepreneurship. The innovative companies nurture and support several leaders and innovators throughout the organizations. The 3M (Minnesota Mining &

Manufacturing) has been described as "so intent on innovation that its essential atmosphere seems not like that of a large corporation but rather a loose network of laboratories and cubbyholes populated by feverish inventors and dauntless entrepreneurs who let their imaginations fly in all directions (p. 14). They encourage creativity. Innovation success is a number game. The crystal-clear message is that no matter how small the odds are of any one thing's working, the probability of something's succeeding is very high if you try lots of things (p. 209). So the idea is make sure you generate a reasonable number of mistakes (p. 14).

4. Productivity through people. The excellent companies believe in the rank and file being the root source of quality and productivity gain. They show respect for the individual (pp. 14, 15). Although most top managements assert that their companies care for their people, the excellent companies are distinguished by the intensity and pervasiveness of this concern (p. 242). In fact every worker is seen as a source of ideas not just acting a pair of hands (p. 15).

5. Hands on, value driven. The excellent companies are marked by regular assessments of quality, service, cleanliness, and value. The top men in such companies are known for walking the plant floors (p. 15). These companies set and demand standards of excellence. Anybody who accepts mediocrity - in school, in job, in life - is a guy who compromises. And when

the leader compromises, the whole damn organization compromises, (p. 285). So its a question of high premium on quality, service, cleanliness, and value, and aversion to mediocrity that sets an excellent company apart from the run of the mill ones.

6. Stick to the knitting. Excellent companies tend to be rooted in a base they know best, they never acquire a business they do not know how to run. Barring exceptions, the odds for excellent performance seem strongly to favour those companies that stay reasonably close to businesses they know (p. 15). Diversification in the areas not fully known makes most acquisitions go awry. For the reasons that in the first place, both the qualitative guiding value (most frequently a blend of quality/service, people orientation, and innovation and the hands on approach are at war with diversification strategies. The typical diversification strategy dilutes the guiding qualitative theme - in part because the acquired institution undoubtedly has different shared values, but also because themes, even general themes, such as quality tend to lose meaning when the organization strays far afield. Management loses its "feel" (p. 293).

7. Simple form lean staff. Most excellent companies are not formally run with a matrix organization structure and some which had tried that form had abandoned it (p. 15). Matrix management is a compromise between functional and product departmentation and it involves the combining of two forms of

departmentation in the same organization structure. For example there may be functional managers incharge of engineering functions with an overlay of project managers responsible for the end product - project (Koontz, O'Donnell, Weihrich, 1980, pp. 377 - 379). The underlying structural forms and systems in the excellent companies are elegantly simple. Top - level staffs are lean; it is not uncommon to find a corporate staff of fewer than 100 people running multi - billion - dollar enterprises (p. 15).

8. Simultaneous loose tight properties. The excellent companies are both centralized and decentralized. They are fanatic centralists around the few core values they hold dear. But at the same time for the most part they push autonomy down to the shop floor or product development team. At Digital Equipment, a company considered to be one of the excellent ones; one executive noted damn few people know who they work for. Yet Digital's fetish for reliability is more rigidly adhered to than any outsider could imagine (p. 16). In excellent companies autonomy is a product of discipline. The discipline (a few shared values) provides the framework. It gives people confidence (to experiment, for instance) stemming from stable expectations about what they really count (p. 322).

The books *In Search of Excellence* (Peters & Waterman jr., 1982) and *A Passion for Excellence* (Peters & Austin, 1986) have been received with mixed feelings. People have been ambivalent

(Van de Ven, 1983), and critical (Aupperle, Acar, & Booth, 1986; Carroll, 1983) toward the prescriptions as well as the contents of the prescriptions. Nevertheless as Van de Ven (1983) noted that "while the authors do not provide the alternative theory that they call for, they have provided a rich and valuable source of qualitative stories, vignettes, and paradoxes that administrative scientists need to begin to take into account. That alone makes this book a significant contribution to advancing administrative science" (p. 624). Mention may also be made of slim volumes like 'Excellence in Management' (Parkinson & Rustomji, 1983) and similar ones that are being churned out at a notable rate of publication only to underline the attention that this construct of excellence keeps on receiving till date from experts and novices alike in the area of organizational behavior.

Hickman and Silva (1985, p. 23) further argue that it is the individual executives who have developed specific skills that create superior organizational performance. Excellence does not happen miraculously but springs from pace - setting levels of personal effectiveness and efficiency. Great business, government, and nonprofit organizations owe their greatness to a few individuals who mastered leadership skills and passed those skills on to succeeding generations of executive and managers (p. 23). This makes good sense because in the ultimate analysis it is the individuals that make

organizations and therefore the individuals should be creators of excellence and also ideally should groom future leader successfully toward building a strong corporate culture of excellence. In persuasion of this argument there are a few implicit assumptions that need to be clarified in context of the present research. Firstly, excellence would be defined as surpassing of the existing standards of performance. Secondly, a distinction would be made in that the construct of excellence can be translated both at the organizational level as well as the individual level, and at the same time it would be maintained that since organizations are a human collectivity therefore the construct of excellence at individual level would have ramifications for the organization also. Considering the problems involved in collection of macro level data, this research primarily would rely upon responses from the individual respondents. In keeping with the research approach of having the individuals in focus, characteristics of the construct of excellence would be translated for operationalization at individual level while maintaining the basic character of the ingredients of the construct.

With the description of the three major thrust variables, namely creativity, competence, and excellence drawing to a close, we now turn to the description of other relevant variables included in this study.

The Variables in the Study

Until now the three variables, namely creativity, competence, and excellence have been described that could be taken as major thrust variables of the present work. Variables in the present work have been organized in five sectors. First, consisting of environmental forces affecting the person termed as Person's Environmental Forces; second, consisting of variables related to personal characteristics; third, consisting of variables related to organizational characteristics; fourth, consisting of variables related to organization level outcomes; and fifth, consisting of variables related to person level outcomes. It should be noted that out of three major thrust variables mentioned earlier two (creativity and competence) belong to the personal characteristics categorization, and one (excellence) is conceptualized as belonging to the category of person level outcomes. However, these three variables have been described together at an early stage by virtue of them being of primary interest. The remaining variables would be described within each of the five categories mentioned above. The descriptions follow.

Person's Environmental Forces' Variables

Environmental forces exert their influences on the individual through socialization process. Socialization refers to the adoption and internalization by individuals of values, beliefs, and ways of perceiving the world that are shared by

the group. When internalization is effective the individual ends up wanting to behave as others want him or her to behave as a responsible group member (Jones & Gerard, 1967, p. 76). Most of the codes and values of the socializing agency become part of the very fabric of an individual's personality along the process of socialization. By this time the fact has been realized to a considerable extent that socialization has long lasting impact on cognition and behavior. Socialization is a process that can be thought of as continuing over the life span. An average normal adult work organizational role incumbent may be expected to have had exposures to four broad categories of socialization periods. These would be (a) childhood environment, the period during which the primary socialization process is a function of the environment that includes mainly parental and family influence, (b) school environment the period during which the primary socialization process is a function of the environment that includes mainly the teachers and peers, (c) present social environment, the period that marks departure from adolescence and entry into adulthood and in which the socialization process becomes a function of adult social exchange, and (d) present work environment, the period which is a special case relevant only to spatially and temporally relevant organizational role incumbents as differentiated from rest of the 'nonworking' human kind. It marks the influences of superiors, subordinates, and peers in work setting.

A case can be made in favour of the agreement that the present work environment may not stand differentiated from the concept of organizational climate, and truly so. The line between these two is a pretty thin one. And the demarcation is more for conceptual clarity sake than actual. Conceptually the variable of present work environment would specifically pertain to those aspects of work environment that may be taken as the components of organizational socialization forces. Whereas the concept of climate, as used in the present research, would pertain to the general attributes of overall internal environment in which the role incumbent works. It is acknowledged that it should be all right to incorporate the concept of present work environment within the framework of climate only. However, conceptually the present work environment would be treated as the part of the general overall environmental forces that surround an individual whereas the concept of climate would be treated as the specific internal environmental attributes of an organization in which the individual works.

Many studies have been conducted to examine the influence of family characteristics and parental behaviors on creativity (Albert, 1980; Miller & Gerard, 1979). It has been found that creativity is fostered when parents feel personally secure and not concerned about conforming to society, behavioral inhibitions, or rules on status and roles (Miller & Gerard, 1979). It was found that fathers of creative boys showed less

conventional sex role stereotyping than the fathers of noncreative boys (Grant & Domino, 1976). In another study Domino (1969) found that mothers of creative boys were less inhibited, less concerned about making a good impression, and relatively unresponsive to social demands. In some studies it has been concluded that parents of creative children were low in authoritarianism (Bayard de Volo & Fiebert, 1977; Bloom & Sosniak, 1981; Mackinnon, 1962), low in disciplinary restrictiveness (Datta & Parloff, 1967; Getzels & Jackson, 1961; Parish & Eads, 1977) and low in strong overt expressions of warmth (Drevdahl, 1964; Siegelman, 1973). Freeman (1985) argued that creativity can be fostered in an environment where the child is emotionally secured and encouraged to take risks with new and unfamiliar ideas.

The influences of educational background including school life, teachers' style, and peer group on creativity have been studied. It has been found that open classrooms, with emphasis on individual instruction and less teacher control may be more conducive to creativity than the traditional classrooms (Horwitz, 1979; Ramey & Piper, 1974; Silberman, 1970; Sullivan, 1974). In some studies effect of peer group on creativity has been found positive (Drews, cited in Amabile, 1983, p. 160; Marjoribanks, 1978) whereas Torrance (1968) suggested that peer pressure in classrooms can undermine creativity.

There seemed to be almost no empirical research on the effects of work environments on creativity. However, in one study (Andrews, cited in Amabile, 1983, p. 166) it has been suggested that work environments most conducive to creative potential includes a high level of worker responsibility for initiating new activities, a low level of interference from administrative superiors, and a high stability of employment.

Rogers (1954) proposed that creativity fostering environment is characterized by psychological safety and psychological freedom. Psychological safety is created when individual is provided a climate free of external evaluation and he is recognized as having some unconditional worth. The psychological freedom is created when individual is granted permission to engage in unrestrained symbolic expression. Carl Rogers' theory of creative environment has been tested empirically and was supported (Harrington, Block, & Block, 1987).

Self perceived competence (expectation of task success) was found to be a positive function of extent to which parents have encouraged independence of thought and action, self versus external control, and participation in family decision making (Rehberg, Sinclair, & Schaefer, cited in A.K. Korman, 1973, p. 73).

Familial experiences were found to be related to locus of control. Warmth, supportiveness, and parental encouragement seemed to be essential for the development of an internal locus of control (Katzovsky, Crandall, & Good, 1967).

Influence of family background has been studied in relation to self-esteem. Coopersmith (1967) on the basis of empirical evidence contended that parents of high self-esteem permit relatively greater freedom within the structures they have established, permit greater rather than less deviation from conventional behavior and freer individual expression. The families of children with high self-esteem were more demanding for academic performance and excellence.

Person Related Variables

Biographical information. Biographical information has been consistently shown to be a valid predictor of organizationally relevant criteria (Childs & Klimoski, 1986; Owens, 1976; Shaffer, Saunders & Owens, 1986). It has been found in several studies that there are age differences in creativity. The greatest differences were found between the young and the middle aged groups (Dennis, 1956; Lehman, 1953; Ruth & Birren 1935), and difference between middle-aged groups and old-aged groups were small. These studies have found a range of 30 years to 40 years age, as the best period of creative production.

Relationship between age and locus of control has been explored (Lao, 1976). Lao (1976) contended that locus of control is an age related variable and the concept has a different meaning for older people. Robert Knoop (1931) explored the relationship of internal - external locus of control

with education, sex, income, self-esteem, job involvement, job satisfaction and alienation across different age groups and these variables showed stronger correlations with locus of control for adults than for younger adults.

The effect of job tenure on the relationship between perceived task attributes and job satisfaction has been studied (Orphen, 1984). It was found that at the initial stages of the joining a position satisfaction with all the five 'core' job characteristics was significant and after six years only two of them remained significant satisfiers. These results have been discussed in light of career stage models (Katz & Van Maanen, 1977; Schein, 1971).

Nath (1980) found a negative relationship between length of service and role ambiguity.

The relationship between education, management style, and organizational effectiveness has been explored by Lawler (1985). He found the raising education levels does not necessarily lead to higher organizational effectiveness.

Some empirical evidence has been found for the positive linear relationship between age and job satisfaction (Altimus & Tersine, 1973; Arvey & Dewhirst, 1979; Carrell & Elbert, 1974; Friedlander, 1963; Gibson & Klein, 1970; Herzberg, Mausner, Peterson, & Capwell, 1957; Hulin & Smith, 1965; Lawrence, 1972; Saleh & Otis, 1964). DuBrin (1985) contended that the relationship between age and satisfaction is nonlinear.

Many studies reported a negative relationship between education and job satisfaction (Carrell & Elbert, 1974; Klein & Maher, 1966; Lawrence, 1972).

Recently the variable job seniority that has received little attention from the researchers (Gordon & Johnson, 1932) has been studied with outcome variables (Gordon, Cofer, & McCullough, 1936). Job seniority was found to be either uncorrelated (Gordon & Fitzgibbons, 1982; Mathews & Cobb, 1974) or negatively correlated with performance in that job (Medoff & Abraham, 1980, 1981).

Intrinsic job motivation. Intrinsic job motivation could be defined as the degree to which a person wants to work well in his or her job in order to achieve intrinsic satisfaction (Warr, Cook, & Wall, 1979). Intrinsic job motivation could be viewed as an specific aspect of intrinsic motivation. Intrinsic motivation is relatively more general and global concept. In the present study the concept of intrinsic job motivation has been the focus which presupposes an individual's intrinsic motivation only in the particular job setting. However, one cannot think of intrinsic job motivation without discussing intrinsic motivation. In fact the concept of intrinsic job motivation does have a linkage with the concept of intrinsic motivation proposed by Lawler (1969).

According to Lawler (1969) intrinsic motivation is the degree to which a job holder is motivated to perform well

because of some subjective rewards or feelings that he expects to receive or experiences as a result of performing well.

Lawler indicated that intrinsic motivation should exist to the extent that jobs are seen by the job holders as one that will lead to feelings of higher order need satisfaction.

Another viewpoint about the intrinsic motivation has been proposed by Deci (1971, 1975) according to whom individuals are intrinsically motivated when they engage in a work for the pleasure derived from the activity itself and not because of external rewards. Deci (1975) suggested that the need to feel competent and self determining underly the intrinsically motivated behavior. These serve as the motivational propensity for intrinsic motivation. Further based on this definition he proposed his cognitive evaluation theory (Deci, 1975). The theory suggests two processes which affect the intrinsically motivated behavior i.e., change in perceived locus of causality, and the change in perceived competence and self-determination.

It should be noted that in the present study the concept intrinsic motivation is being used with a specific reference to intrinsic job motivation. Job in this context refers to the particular tasks that are being handled as a result of holding some role in an organization. Intrinsic job motivation thus could be viewed as intrinsic motivation but in a very specific context.

Intrinsic motivation has been studied in relation to creativity. It was found that intrinsic motivation was conducive and extrinsic motivation was detrimental to creativity (Amabile, 1985).

It was found that personal control over performance was a very important determinant of intrinsic motivation (Fisher, 1978). Fisher (1978) also found that interaction between personal control over the performance and competence was such that both of these variables had to be high in order to intrinsic motivation be high.

Intrinsic motivation and satisfaction were found to be related (Mottaz, 1985). Warr, Cook, and Wall (1979) found intrinsic job motivation to be related positively with job satisfaction and perceived intrinsic job characteristics.

Relationship between internal work motivation and performance has been found to be positive (Oldham, 1976). This suggests that more the employee experiences positive internal feelings from performing effectively, the greater will be his or her work performance or effectiveness.

Locus of control. Locus of control refers to a generalized expectancy of internal or external control of reinforcement. A generalized expectancy of internal locus of control refers to the perception of events under the direct control of the individual himself, whereas generalized expectancy of external control refers to the perceptions of events beyond one's

own control (Lefcourt, 1976; Phares, 1976; Rotter, 1966).

An external locus of control in which outcomes are supposed to be externally controlled that is, by factors such as fate, chance, powerful others etc., has been related to anxiety, depression, neuroticism etc. On the other hand internal locus of control in which outcomes are thought to be self controlled, has been related to the characteristics such as independence, self-confidence, and social insight (Sadowski, Woodward, Davis, & Elsbury, 1983).

It could be hypothesized that perceived controllability would have its impact on the behavior (Spector, 1982). In several studies it has been found that individuals with internal locus of control seek and retain more information (Davis & Phares, 1967; DuCette & Wolk, 1974; Lefcourt & Wine, 1969; Seeman, 1963), perform better (Prociuk & Breen, 1974), hold higher self-regard for themselves (Ryckman & Sherman, 1973), and are less anxious (Nelson & Phares, 1971).

Though relationship between creativity and locus of control has not been explored directly, some indirect references could be sought to hypothesize the relationship between the two. Lefcourt (1976) cited that "unique and innovative minds grow among those ... who continue to hold assumptions that they are free agents, the makers of their own fate" (p. 2). It was found that internals as compared to externals actively seek out information that can be used to achieve their goals

(Davis & Phares, 1967; DuCetle, & Wolk, 1974; Lefcourt & Wine, 1969; Seeman, 1963). Since seeking information is a vital element of creative problem solving process it would be plausible to predict that internals would be more effective in creative problem solving than externals because internals would be more effective in creative problem solving than externals because internals would be able to clarify and redefine a problem situation more easily than the externals.

Locus of control has been also found to be related to mastery (Wright & Holman, 1980) which could be thought of as an index of competence. It was found that individuals with internal locus of control, relative to external demonstrated several aspects of greater mastery and attributed more responsibility to themselves for success. Locus of control was found to be significantly related to competent performance where subjects placed high value to outcomes (Naditch & Demaio, 1975). Tseng (1970) found internals showing more ability to work with others and more cooperation, self-reliance, courtesy, reliability, and work knowledge. Consistently internal subjects were shown to be more competent and achievement oriented than external subjects (Broedling, 1975; Joe, 1971; Lefcourt, 1966; Prociuk & Breen, 1974). The explanation given for this suggested that internal subjects perceived reinforcements to be directly related to their ability and effort, or in other words, they perceived situation within their control.

Consequently they performed better than the external subjects and this made them feel more competent.

Locus of control has been studied in relation to self-esteem. Internals reported having greater self-esteem than did externals (Fish & Karabenick, 1971; Ryckman & Sherman, 1973; Sadowski, Woodward, Davis, & Elsbury, 1983; Wallace, Cunningham, & Monte, 1984).

The literature on the relations between perceived job characteristics and locus of control is inconsistent and inconclusive. Kimmons and Greenhaus (1976) found internals reporting having more autonomy and receiving more feedback than did externals. Sims and Szilagyi (1976) found some support for his hypothesis that locus of control would moderate the relationship between perceived job characteristics and job satisfaction. He found that only for autonomy there was a significant difference in the correlations with supervisor for the moderating role of locus of control (Kimmons & Greenhaus, 1976).

It was found that role incumbents with internal locus of control were more attuned to a participative management style (Mitchell, Smyser, & Weed, 1975). Runyon (1973) found the moderating effect of locus of control on the relations between supervisory style and satisfaction with supervisor. Internals were more satisfied with the participative leadership style than the externals. And externals were more satisfied with

a directive style. Abdel-Halim (1931) reported that internals' satisfaction was unrelated to their supervisors' consideration, but externals' reported less satisfaction with low consideration than with high consideration supervisors. These results suggests that two types of individuals (internal and external) would prefer different styles and they might react to them differently. It could be said that the effectiveness of supervisory styles may vary depending on the subordinates' locus of control.

Locus of control has also been studied in relation to the variables role ambiguity and role conflict. Organ and Greene (1974) reported a significant positive correlation between locus of control and role ambiguity, i.e., people with an internal locus of control tend to perceive less ambiguity about their roles than do the people with an external locus of control. However, Evans (1974) reported a negative correlation between the two. In some studies locus of control has been treated as the variable moderating the relationship of role ambiguity and job satisfaction. Abdel - Halim (1980) found externals to be more satisfied under low than high ambiguity. However, in case of internals it was not true. In another study relationship of job satisfaction with role ambiguity and role conflict was not found to be moderated by locus of control (Batlis, 1980_a). Results regarding the relationship of role ambiguity and locus of control have been inconclusive.

Locus of control has been found to be related to job satisfaction. It was found that internals had higher level of job satisfaction (Andrisani & Nestel, 1976; Gammill & Heisler, 1972; Lester & Ganz, 1978). One study reported the externals to be more satisfied with their coworkers than the internals (Dailey, 1978).

Internal locus of control has been found related with high job performance (Andrisani & Nestel, 1976; Heisler, 1974; Hirsch & Scheibe, 1967; Majumdar, MacDonald & Greever, 1977; Valecha, 1972).

Need for pioneering. Need to pioneer or pioneering motivation refers to the need to create, to discover, to pioneer, to do something original and distinctive (Khandwalla, 1984). Houston & Madnick (1963) tested this hypothesis that a highly creative person has a strong need for novelty. The need for novelty or pioneering motivation has been found to be strongly associated with creative behavior (Barron 1958; Golovin, 1959; Sprecher, 1959). Schaefer (1967) found that creative people showed strong desire for achievement and independence as well as a need for novelty, complexity, and change. According to Khandwalla (1984) this is a need that not only makes one develop his or her potential; it is a need that impels one to seek a distinctive expression of ones potential..... this turns into a supremely powerful motive of creative behavior (p. 82).

Need for self-actualization. The construct of need for self-actualization refers to a person's desire for self-fulfillment, or to the tendency to become actualized in what he or she is potentially (Maslow, 1954; pp. 91, 92).

self-actualization although a term coined by Goldstein (1939) became popular after Maslow's (1954) work on need hierarchy. Maslow (1954) proposed that all human needs could be classified in a hierarchical fashion. At the base of the hierarchy are the physiological needs, followed by the safety needs. Next in the hierarchy is the need for belongingness and love. The esteem needs appear next in the hierarchy. Maslow placed need for self-actualization at the top of the hierarchical scheme. According to Maslow (1954) in the self-actualizing person all these needs are essentially gratified and directions of behaviors are generally guided by the need for self-actualization.

Maslow reported fifteen characteristics of self-actualizing persons. They are (a) more efficient perception of reality and more comfortable relations with it, (b) acceptance of self and others, (c) spontaneity, (d) problem centering, (e) the quality of detachment; the need of privacy, (f) autonomy; independence of culture and environment, (g) continued freshness of appreciation, (h) the mystic experience; the oceanic feeling, (i) social interest, (j) interpersonal relations, (k) democratic character structure, (l) discrimination between means and ends, (m) sense of humour, (n) creativeness, and (o) resistance to enculturation.

Maslow's (1954) concept of self-actualization may be considered to be somewhat akin to Fromm's (1941) 'the productivity-orientation'; Lecky's (1945) 'the unified personality; self-consistency'; Snygg and Combs (1949) 'the preservation and enhancement of the phenomenal self'; Horney's (1950) 'the real self and its realization'; Riesman, Glazer, and Denny's (1950) 'the autonomous person'; Rogers' (1954) 'fully functioning person'; and Allport's (1955) 'creative becoming'. Maslow (1954) perhaps used this term in a more specific and limited way, that is "the desire to become more and more what one is, to become everything that one is capable of becoming" (p. 92).

In the present context the working definition of the concept of need for self-actualization may be viewed as the desire to make full use of one's potentialities, talents, and capabilities which enables a person to realise his or her actual worth. On the basis of the literature cited above, it could be assumed that every individual has some unique potentialities which he or she may not be aware of. When the needs (physiological, security, love, and esteem) are satisfied to a certain level he or she becomes inquisitive about himself or herself then the need to grow in oneself becomes dominant which provides impetus for searching ways relevant for the self-actualization.

There is little research evidence available on the concept of self-actualization especially in the organizational

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context. However, Maslow did carry out extensive research and cited the characteristics of self-actualizing person but he did not mention the details of the methodology adopted in his research.

The need for self-actualization has been related to creativity. Maslow (1954) found creativity to be more prominent in self-actualizing persons. Maslow differentiated this kind of creativity from productive creativity. This creativity is a special kind of creativeness or originality or inventiveness characterized by an expression of perceptiveness and spontaneous behavior.

Hersey and Blanchard (1982) mentioned that feeling of competence is related to the concept of self-actualization. It could be argued that feeling of competence is enforced by the "effectance motivation" (White, 1959) and exploration. These feelings underly the personal growth. Therefore these two concepts seem to be related to each other.

Need for self-actualization could also effect job satisfaction. The satisfaction was found to be greater when persons believed that job requires abilities which they believed to be possessing. This is a modified version of Maslow's hypothesis (O'reilly, 1973).

Personal characteristics. All the variables that have been described in the category, namely person related variables may come under the category of personal variables.

Sometimes these variables are also referred to as personal characteristics. Some personal characteristics apart from those mentioned earlier, have particularly been found to be related to creativity.

Creative individuals have been found to be high on need for achievement (Gough, 1964), need for curiosity, to be self-assertive, dominant, aggressive, self-sufficient (Barron, 1955, 1957; Cattell & Drevdahl, 1955; Vangelst & Kerr, 1951), to be less inhibited, less conventional self-disciplined, persistent (Blatt & Stein, 1957), independent and autonomous (Barron, 1955; Blatt & Stein, 1957; Peck, 1953; Roe, 1953).

Torrance (1965) reviewed 60 such characteristics and then finally concluded that 19 traits could be judged to be closest to creativity. They were courageous in convictions, independent in thinking, independent in judgement, unwilling to accept say so, willing to take risk, adventurous, a self-starter, persistent, determined, occupied with tasks, self-confident, self-assertive, curious, always asking questions, intuitive, visionary, emotionally sensitive, striving for distant goals, and attempting difficult tasks. And 17 traits could be judged to be farthest from creativity were as follow timid, reserved, bashful, quiet, obedient, willingness to accept judgement of others, haughty and self-satisfied, domineering, stubborn, negativistic, courteous,

popular, altruistic, physically strong, talkative, sophisticated, and punctual.

Self-esteem. Self-esteem refers to an evaluation of self, made by individual. It is based on person's beliefs about his or her competence in different roles. If the person feels good about his self, self-esteem is said to be high. If the person has a low opinion of self, self-esteem could be low (Hill, 1934). Rosenberg (1965) defined a person with high self-esteem as one who "feels that he is a person of worth; he respects for himself for what he is" (p. 31). Coopersmith (1967) conceptualized self-esteem in terms of "the evaluation which the individual makes and customarily maintains with regard to himself: it expresses an attitude of approval or disapproval and indicates the extent to which the individual believes himself to be capable, significant, successful, and worthy" (p. 5).

Korman (1970), on the basis of the assumption that people are basically motivated to perceive consistency among the elements in their cognitions, postulated that other things being equal, high self-esteem person would be motivated to perform well on a task in order to maintain his self-image of competence and becomes dissatisfied if his or her performance remains low. On the other hand low self-esteem persons do not attempt to perform well since poor performance for them is consistent with their self-image of incompetence. Korman

(1970) pointed out three sources of self-esteem. Chronic self-esteem which is a stable personality factor that occurs across variety of situations; task specific self-esteem which relates to specific areas of perceived self-competence and social self-esteem which could be viewed as the function of others' expectations of one's behavior.

A hierarchical facet model of self-esteem proposed by Shavelson, Hubner, and Stanton (1976) includes emotional, social, physical, and academic components of self-esteem. The authors made a distinction between academic and nonacademic self-esteem at the conceptual level. They proposed that nonacademic self-esteem is composed of emotional, social, and physical components and academic self-esteem comprises academic component. Fleming and Courtney (1984) found evidence in support of this model.

The beliefs that model about the worth might be expected to be positively correlated with creativity (Van Gundy, 1984). Although no study could be found directly relating these variables to the foci of this research, some inferences can be drawn from the existing literature. There is increasing evidence that creative persons have a basic quality of self-confidence or self-esteem. Rogers (1954) has suggested that an 'internal locus of evaluation' which means confidence in one's perceptions and judgements, is one of the three characteristics consistently related with creativity. Mackinnon

(1962) found the most creative group of architects as more poised, more self-confident, and more self-assured. Domino (1971) found similar findings in a study of men working in the field of cinematography. Maslow (1954) found self-actualizing persons to be creative and also that they had no doubts about their self-worth. Barron (1968) reported creative scientists having greater professional self-confidence.

Although self-esteem was not mentioned specifically, all the above mentioned studies seemed to suggest a positive relationship between self-esteem and creativity.

It has been found that individuals with high self-esteem feel capable of coping with adversities and competent enough for achieving success (Coopersmith, 1967).

Hackman (1977) emphasized that people will not take advantage of enriched jobs unless they possess certain high level of self-esteem. According to Hackman (1977) motivation can be increased by improving upon job characteristics and individuals' self-esteem.

Self-esteem has been studied as a moderator of satisfaction and performance. Some studies supported this moderating influence of self-esteem (Jacobs & Solomon, 1977; Korman, 1968; Waters & Roach, 1972). There are studies offering partial support (Kerr Inkson, 1978; London & Klimoski, 1975; Lopez, 1982). Some studies yielded nonsignificant results (Dipboye, Zultowski, Dewhirst, & Arvey, 1979; Greenhaus &

Badin, 1974; Leonard & Weitz, 1971; Leveto, 1975; Siegal & Bowen, 1971; Tharenou & Harker, 1984). Studies in which self-esteem was treated as a moderator of performance and intrinsic job satisfaction (Kerr Inkson, 1978; Lopez, 1982) seemed to suggest that high self-esteem persons with their greater assertiveness, internal locus of control, growth needs, and lower anxiety (Tharenou, 1979; Wylie, 1979) would perform better and be more satisfied with jobs high in complexity.

Organization Related Variables

Climate. As back as 1932, Tallman argued that if in order to understand rat behavior it is necessary to consider the environment, one must pay even more attention to it with human subjects whose environments are much more complex and variable. It is obvious that concept of environment is important. Further, there is a need for concepts that refer to variations in the environment. Studies on the construct of organizational climate are attempts in this direction.

Taguiri and Litwin (1963) used the terms climate and organizational climate to refer to the index of the perceived environmental quality (p. 1). Litwin and Stringer (1963) incorporated the McClelland-Atkinson formulation of motivation (which stated that motivated behavior is in large part a function of perceived environmental variables such as expectancy and subjective incentive value), attempted to describe the cluster of expectancies and incentive values that reflect in

a whole organizational environment, and formulated a perceived questionnaire measure of organizational climate. Litwin and Stringer (1968) came up with a fifty item questionnaire encompassing nine dimensions of organizational climate. The items were to be rated on a four point scale from definitely agree to definitely disagree. Its nine scales included (a) structure of work, (b) responsibility - willingness to take, (c) reward - degree of positive, (d) risk - willingness to take, (e) warmth, (f) support - trust, (g) standards of performance, (h) conflict - openness to, (i) identity - loyalty.

Definitions, operationalization, and measurement of the construct of climate has remained a ticklish problem owing mainly to differences regarding what exactly it is that this term climate should be construed as referring to. According to Forehand and Gilmer (1964) organizational climate refers to the set of characteristics that describe an organization and that (a) distinguish the organization from the other organizations, (b) are relatively enduring over time, and (c) influence the behavior of people in the organization (p. 362). They included size, structure, systems complexity, leadership style, and goal directions as the dimensions of the organizations variation. Some authors (Hall, Haas & Johnson, 1967; Pugh, Hickson, Hinings, & Turner, 1968) have referred those as a situational variance or structure. Others included organizational models and taxonomies (e.g., Hall et al.,

1967; Indik, 1963; Katz & Kahn, 1973), multiple measurement approach (Litwin & Stringer, 1968), organizational context (e.g., Lawrence & Lorsch, 1967; Pugh et al., 1969; Woodward, 1965), organizational structure (Porter & Lawler, 1965; Pugh et al., 1969), and system, values, and norms (Katz & Kahn, 1973). However, organizational climate appears to be synonymous to the organizational situation (James & Jones, 1974).

James and Jones (1974) reviewed the climate research definition and measurement approaches up to that time and differentiated them into three categories, namely a multiple - measurement organizational attribute approach, a perceptual measurement - organizational attribute approach, and a perceptual measurement - individual attribute approach. James and Jones suggested a difference between organizational climate and psychological climate, the former referring to organizational attributes, main effects, or stimuli; and the latter referring to individual attributes such as the intervening psychological process whereby the individual translates the interaction between perceived organizational attributes and individual characteristics into a set of expectancies, attitudes, behaviors, etc. (p. 1110). In a later article James and Jones (1976) presented the relationships of individual attitudes and behaviors (components of psychological climate) with the dimensions of organizational structure such as (a) total organizational size, (b) centralization of decision

making and authority, (c) configuration, (d) formalization, (e) specialization, (f) standardization, and (g) interdependence of organizational components. The point to note is that psychological climate stands differentiated from structural aspects.

Payne and Pugh (1976) further elaborated upon the concepts and measurement of organizational structure and climate bringing out the differences and relationships between the objective and perceptual measures of these two constructs. They contended that organizational climate is influenced by organization members' individual perceptions, and is, thus, relatively subjective ... (p. 1126). They argued that there could be subjective as well as the objective measures of both climate and structure (p. 1143). Payne and Pugh noted that in general, climate measure did not show any generalizable relationship with perceptual measure of structuring of work activities (p. 1167).

There appears to be a feeling that it is useful to distinguish between psychological and organizational climate (James & Jones, 1974; Joyce & Slocum, 1979; Payne, Fineman, & Wall, 1976). Psychological climate refers to the individual descriptions of organizational practices and procedures. Such descriptions contribute to the understanding of the influence of the internal organizational environment on individual performance and satisfaction (Schneider, 1975). Organizational

climate reflects a collective description of this environment often assessed through an averaged or summated perceptions of organization members, which may have presumed relationship with organization or sub-unit functioning (Jones & James, 1977). Joyce and Slocum (1982) argued that discrepancy between psychological and organizational climate may be recognized as a third climate concept that could significantly relate to both individual job performance and satisfaction. Discrepancy could be more important correlate of job satisfaction and organizational climate could be more important correlate of job performance. Field and Abelson (1982) considered climate as a perceptual attribute on an organizational, group, and individual level. Field and Abelson agreed with Schneider (1975), and Joyce and Slocum (1979) that climates are abstract perceptions of individuals within the organizations (p. 183). They further noted that research should view psychological climate (and not organizational climate), as being the most central ... climate is a perceptual interpretation of the environment, and each person has their own perception (p. 197).

Schneider and Reichers (1983) reviewed some of the conceptual and methodological progress that has been made in the area of climate research and suggested a philosophically based explanation of the causes of climate that was termed as the symbolic interactionist perspective. They tried to explain the etiology of climates in terms of an approach termed

selection attraction - attrition (SAA) as against the earlier structural approaches. However, the etiology is not a concern in the present research and the reference has been made only to incorporate a mark in the history of thinking and research on climate. Ashforth (1985) viewed climate as a function of (a) the organizations' structure, (b) the organization's membership, and (c) more recently the memberships' efforts to understand the organization. The third view interactionism was considered as a reconciliation of the objectivism of the first and the subjectivism of the second. Ashforth (1985) in a way adds to the work of Schneider and Reichers mentioned earlier. Although, as mentioned before there have been suggestions of multilevel research and also there exist examples of multilevel research, Glick (1985) pointed to certain pitfalls in multilevel research and suggest some of the ways of staying alert of such pitfalls.

Having reviewed some of the representative viewpoints in the conception of and research on the concept of climate, it seems that climate in the ultimate analysis remains to be a matter of individual's perception of certain attributes pertaining to organizational dynamics. Of course the etiology may lie either in structural or interactional episodes, and the difference between objectivity and subjectivity with regard to the concept may remain debatable for some more time. Within the constraints, the present research subscribed to the

view that climate could be reflected in individual's perception of the various attributes of the organizational dynamics.

Gibb (1972) concluded that organizational climate characterized by trust, openness, self-determination, and interdependence facilitated creativity. He found some characteristics to be negatively related to creativity were latent fear and distrust, restricted flow of communication, attempted imposition of motivation, and attempted control of behavior. Taylor (1972) emphasized that organizational climate does contribute in sustaining a creative idea.

It was found that subjects working under conditions of high consideration and low structure showed high autonomy perceptions but not as high as those in the low consideration and high structure (Ferris, 1983).

Decentralization has been found to be positively related to job satisfaction (Carpenter, 1971). Batlis (1980b) found job climate (specially, organizational clarity) to be the most significant predictor of job satisfaction, anxiety, and propensity to leave. There is some evidence suggesting that climate and job satisfaction are related (Ford & Jackofsky, 1978; Muchinsky, 1977; Schneider & Snyder, 1975; Smith, Kendall, & Hulin, 1969). Centralization seemed to be a confusing variable (Payne & Pugh, 1976). Inkson, Schwitter, Pheysey, & Hickson (cited in Payne & Pugh, 1976) demonstrated negative correlations between decentralization and both

perceived interpersonal conflict and perceived innovative behavior. Child and Ellis's (1973) suggested that greater decentralization would lead to more expected and perceived innovative behavior.

Hierarchical position. Organizations may be thought to be made of role incumbents who occupy various positions in a hierarchy of roles. Weber (1964) brought out the merits of staffing that is, organizing offices according to specialization based on hierarchical position for achieving organizational efficiency, in his famous concept of bureaucracy. In some form or the other, irrespective of whether an organization can be called bureaucratic or not, the hierarchical structuring of the workforce is a general pattern of role allocation in most organizations.

Most organizations, specially the work organizations, seem to maintain a pyramidal structure with more number of role incumbents at the bottom level who actually are responsible for accomplishment of the work or services, the organization deals with. It is to be noted however, that this level may be above than those who are termed as the blue collar workers and responsible for most of the work requiring physical involvement. Less in number and above this level is the middle level of role incumbents who usually discharge the duties of a middle level manager typically consisting of supervising and leading the bottom level while keeping in touch with the policies and

procedures prescribed by the top level role incumbents. Above this level is the level consisting of even lesser number of persons who could be described as the top level managers. These top level role incumbents are a special group that simultaneously is concerned with the internal organizational dynamics as well as the environmental forces. They are the persons who are said to have a boundary spanning role. These three broad categories of hierarchical levels can be taken both as similar, as well as different from one another. They are similar in the sense that all of them can be termed as executives, all of them largely abstain from direct physical involvement compared to the blue collar workers, and all of them exercise some supervisory and decision making roles. However, they can be treated as different also because the specific requirements of the task assigned to these three hierarchical levels are different. The bottom level deals with blue collar workers, the top level deals with environment, and the middle level deals with the former two levels in a way strike a balance between them.

The variations in terms of the roles at various hierarchical level can be approached from a slightly different angle also. Even if we consider a group of managers as the group of managers, there is likely to be differences in terms of experience and the responsibilities that go together. At the entry level the main responsibility of a manager consists

of progress toward certain goals according to certain plans, providing feedback to subordinates as individual contributors. At this level usually the manager is given the goals, plans, and standards of performance by the higher level role incumbents. At this level the manager is also concerned with diagnosing performance problems and is expected to solve them.

At the middle level the manager becomes responsible for progress toward certain goals according to certain plans. Such a person is expected to provide feedback to immediate subordinates who are at the entry level or the lower management level. This feedback is both in terms of individual performance as well as the work group performance. The idea is that higher the managerial level more it would be expected that feedback to subordinate is oriented towards the performance of a work group rather than a individual performance. This feedback, diagnoses of performance problems, and initiation of solutions are typically based on the inputs from the middle level management. Although the plans and goals may initially either emerge from upper levels of management or from the need of the organization as the result of the interface with the environment, the middle level manager usually confirms, if not develops, the goals and plans for his or her unit and is expected to influence subordinates to accept and follow the plans.

At the top level a manager is expected to establish goals and plans for entire organization or considerably large portions

of the organizations. These are established as part of a corporate plan, even if the plan is implicitly available in the mind of the top level manager. These goals and plans take into account the organizational units, such as divisions of work or business groups. Top level manager is expected to be concerned about the image and reputation of the organization as a whole, and should have impact on the immediate subordinates regarding maintaining the image and stimulating performances. Such role incumbents are expected also to be able to diagnose problems and identify opportunities for the organizations as the whole.

Thus it seems that the hierarchical divisions could be approached both as differentiated as well as forming a totality of the managerial cadre within the organization boundaries. The main interest in present research was with regard to the executive group as a whole and relationships among various variables. However, it was conjectured that at some point it could be interesting to see the similarities and differences among three hierarchical levels of respondents with regard to the other thrust variables.

In fact some empirical studies have been conducted which attempted to relate hierarchical position with variables that were of interest in the present study.

Sims and Szilagyi (1975) reported that the degree of leader's structuring activities and role ambiguity were

negatively related among higher level nursing administrators, and positively related among the lower level incumbents.

Parker and DeCotiis (1983) found that hierarchical position was an insignificant predictor of stress dimensions including anxiety and time pressure. Sims and Szilagyi (1975) found that role ambiguity varied across organizational levels. Schuler (1975) contended that in the higher levels of hierarchy, role ambiguity had greater negative effect on job satisfaction whereas role conflict as compared to role ambiguity had greater negative effect on job satisfaction in the lower hierarchical level. It was found that at the higher level interrelationships among role conflict, role ambiguity, and job performance were insignificant; at the lower level, role ambiguity was negatively related with performance as compared to role conflict; and at the middle level role ambiguity and role conflict were found to be negatively related with job performance.

The relationship between hierarchical level and job satisfaction have been explored and most of studies have reported a positive relationship between the two. Most of the research evidences seemed to suggest that role incumbents higher in hierarchy position are more satisfied than those lower in hierarchy position (Bergmann, 1981; Cummings & El Salmi, 1970; Herman & Hulin, 1972, 1973; Marshall & Cooper, 1979; Paine & Gannon, 1973; Porter, 1961, 1962, 1963; Porter & Lawler, 1965; Rosen, 1961). However, there are some studies who have reported

no relationship between hierarchical level and job satisfaction (Armstrong, 1971; Cummings & Berger, 1976; Ebeling & King, 1981; Hulin & Smith, 1965; Starcevich, 1972).

Job characteristics. Job enrichment or job redesign approach mainly focuses on work properties and conditions which substantially influence employee satisfaction, productivity, and effectiveness. These efforts finally resulted in "quality of work life (QWL) movements". QWL had been defined as the favourableness or unfavourableness of the job environment of the people (Davis, 1981).

Although QWL is a relatively recent phenomenon, its traces could be found in many of the earlier works (Hackman & Lawler, 1971; Herzberg, 1968; Herzberg, Mausner, & Snyderman, 1959; Turner & Lawrence, 1965). Motivation - Hygiene theory of work motivation propounded by Herzberg (1966) emphasizes that characteristics of the job function (e.g., responsibility, achievement, advancement, and work itself etc.) work as the satisfiers or motivators, whereas hygiene factors (e.g., pay, security, or status) on the contrary prevent the occurrence of dissatisfaction but they do not motivate individual for extrawork. Job enrichment is a direct application of Herzberg's theory. "Its basic motivational strategy is to increase an employee's output by providing that person with exciting, interesting, stimulating, challenging or responsible work enrichment implies that the quality of work a person is performing is increased" (DuBrin, 1985, p. 115).

A model of job characteristics that has received much attention by researchers is developed by Hackman and Lawler (1971) and later modified by Hackman and Oldham (1976, 1980). Five core job dimensions have been identified by these authors, (a) skills variety (the degree to which job requires a variety of different activities), (b) task identity (the degree to which the job requires completion of a "whole" and identifiable piece of work, (c) task significance (the degree to which job has a substantial impact, (d) autonomy (the degree to which job provides substantial freedom, independence, and discretion to the individual), and (e) feedback (the degree to which job provides the direct and clear information about the performance). Job is said to be enriched to the extent these five core dimensions are central dimensions in the job domain (Abdel-Halim, 1973; Aldag, Barr, & Brief, 1981; Hackman & Oldham, 1975, 1980; Lee & Klein, 1982; Sims, Szilagyi, & Keller, 1976; Stone, 1975). Some studies have provided evidence for a lesser number of dimensions (Dunham, 1976; O'Reilly, Parlette, & Bloom, 1980; Pierce & Dunham, 1978; Pokorney, Gilmore & Beehr, 1980). The evidences regarding the dimensionality of job characteristics appear to be confusing and inconclusive (Fried & Ferris, 1987).

Beehr, Walsh, and Taber (1976) suggested that undesirable job characteristics could be related to stress phenomena.

Job characteristics and job satisfaction were found to be related positively in many studies (Caldwell & O'Reilly, 1982; Griffin, 1982; Oldham, 1976; Orpen, 1984; Umstot, Bell, &

Mitchell, 1973). Oldham, Hackman, and Pearce (1976) found that employees who were satisfied with pay, job security, coworkers, and supervisors, responded more positively to enriched job than the employees who were not satisfied with these factors.

It has been found that job characteristics often leads to improved effectiveness (Ford, 1969; Locke, Sirota, & Wolfson, 1976; Paul, Robertson & Herzberg, 1969). However, in some studies it was also found that job redesign sometimes fails to create positive outcomes (Frank & Hackman, 1975; Lawler, Hackman, & Kaufman, 1973).

Leadership styles. Leading and managing may not be taken as synonymous. Leading is only one vital aspect of the managerial process. Managerial process also includes such functions as planning, controlling, organizing, scheduling, and negotiating. The processes used by leaders to influence people include motivation, communication, counselling, and decision making. Individual contributor can exercise leadership in organizations and informal leaders, without official sanction from the organization, may also emerge in certain cases. In short not all managers are leaders, not all leaders are managers (DuBrin, 1985, p. 310). Zaleznik (1977) in his famous Harvard Business Review article, argued that true leaders adopt a personal and active attitude towards goals viewing them as basic reason for being whereas mere managers view themselves as

conservators and regulators of an existing order that they personally identified with and from which they gain rewards.

Leadership may be defined as the process of influencing the activities of an individual or a group in efforts toward goal achievement in a given situation (Hersey & Blanchard, 1982). The construct of leadership has been extensively researched within the framework of organizational behavior and it stand out as one of the key variable demarcating between effective and less effective organizations or their subgroups. Extensive reviews of this variable already exist (e.g., Bass, 1981; Stogdill, 1974; Stogdill & Coons, 1957). Sinha (1980) has made a lot of contribution on this variable in Indian setting, and has identified a style of leadership that he termed as the Nurturant Task style.

The very fact that leadership is such a key variable, scholars have engaged themselves in persuing the construct and its applications and ramifications in various terms and situations. The concern is evident in the writings of authors like Maccoby (1981), who argued that a new model of leadership that expresses an ethic of self-development is needed at all levels of all kind of organizations; Manz (1983, 1986) who made a case for focusing more on development of self-leadership capabilities; Kerr and Jermier (1973) who identified a number of substitutes of leadership contained in individual, task, and organizational variables; Burns (1978) emphasized transforming

leader who thinks beyond the day-to-day problems of the organization and focuses on developing new level of awareness among persons; Hickman and Silva (1985) who emphasized the need for visionary leaders who can create excellence through a fusion of strategy and culture (p. 160); Graen and his associates (Cashman, Dansereau, Graen, & Haga, 1976) who drew attention to the fact that leaders exhibit very different patterns of behaviors toward different members of their work groups and various ramifications of this phenomena; Dienesch and Liden (1986) who in an extension of Graen's (1976) work emphasized the need to think of leader-member exchange as a multidimensional construct; Collins and Moore (1964) and Mascon, Albert, and Khedouri (1981) who emphasized on the need for entrepreneurial leadership even at the cost of being eccentric and having disregard for structure; Wofford and Srinivasan (1983) who in an extension of House's (1971) work proposed leader - Environment - Follower Interaction (LEFI) theory of leadership and contended that effective leader analyzes the deficiencies in the follower's ability, motivation, role perception, and work environment and then try to eliminate those deficiencies; Eden & Leviatan (1975), Phillips and Lord (1986), Rush, Thomas, and Lord (1977), Weiss and Adler (1981) who emphasized on implicit leadership theories and contended that ratings obtained from describing a hypothetical leader were in most cases similar to the ratings obtained for a real leader; and Burns

(1978) who emphasized the characteristics and need of the new corporate leader or transformational leader. Burns contended that transformational leader motivates his subordinates more than what is generally expected from the leader. Whereas transactional leadership contributes to such motivation by clarifying that what performance is required.

According to Burns (1978) the leadership process could occur in one of two ways i.e., either transactional or transformational. Bass (1985) suggested that transactional leadership is characterized by two factors contingent reward and management-by-exception. This form of leadership emphasizes goal clarity, work, standards, assignments, and equipment whereas transformational leadership is characterized by charisma, individualized consideration and intellectual stimulation. Burns (1978) and Bass (1985) defined transformational leadership in terms of the leader attempts to elevate the needs of the follower in line with the leader's own goals and objectives.

It is evident that the concern is remarkable toward theory and application of leadership construct and newer dimensions are being added. In Indian context however, so far only one theorization has held some ground owing to a sustained effort by several persons to test it despite a lack of the conclusive evidents, and that is the theory of Nuturant Task Leadership by Sinha (1980). Sinha identified the fact that several

leadership theories share common concerns and overlapping ground in that they all orient themselves in one way or the other to only the two aspects of a job situation, task and people, which a leader is expected to deal with. Thus Authoritarian (task orientation) and participative leadership (people orientation) styles have been identified as the two major styles of leadership. Examples of such theories could be the works of (e.g., Argyris & Schon, 1974; Bales & Strodtbeck, 1951; Blake & Mouton, 1964; Fiedler, 1967; Likert, 1961, 1967; Lippitt & White, 1943; Vroom & Yetton, 1973). Sinha (1980) drawing upon the unique socio-cultural milieu of the Indian setting and need structure, values, and related characteristics of the Indians, identified a style of leadership that he called the nurturant task style involving two main components (a) concern for task and (b) nurturant orientation. The nurturant task style requires that the task must be completed and that subordinates understand and accept the goals and the normative structure of the group or organization and cultivate commitment to them. The task orientation, however, has the mix of nurturance. The leader cares for his subordinates, shows affection, takes a personal interest in their well-being and above all is committed to their growth.

In Sinha's (1980) work five leadership styles were incorporated. Those were authoritarian, nurturant task, participative, bureaucratic, and laissez faire; and case was

made for the suitability of nurturant task style in Indian setting. In one variant of the nurturant task leadership questionnaire, the items measuring the nurturance and tasks aspects were kept separate (Sinha, 1981) in contrast to the earlier versions in which these two components were kept together. The idea behind seemed to be that the nurturance and task components could exist separately also and not necessarily in a joint form of nurturant task leadership style.

Considering the main focus of the present research that was on creativity, competence, and excellence it is useful to note that literature suggests the value of facilitation for creativity and excellence especially in a target group of chronologically adult persons. Relying upon the fact that the concept of nurturant task leadership is under continued testing in Indian setting this concept was preferred over the other conceptualizations of leadership. Keeping in mind that it is the facilitation aspect that would be important for ramifications in the thrust variables, only one aspect that is the nurturance aspect of the nurturant task leadership construct was proposed to be used. Additionally the construct of participative style was also retained on the basis similar reasoning.

Ownership. Studies both in India and abroad have brought out several variables on which public and private sector organizations may be compared. The comparison, for most mixed

economies, becomes all the more relevant because in the ultimate analysis the citizens would be the recipients of the positive or negative outcomes. Public and Private organizations differ with regard to the funding and ownership, the legal and political environment, and the criteria for accountability and control (Perry & Rainey, 1988). These considerations are important because effectiveness depends on matching the internal organizational structure to the demands of the task environment and as a result, effective functioning of private and public organizations would depend on different criteria because each must adopt to different environmental contingencies (Solomon, 1986, p. 247).

Some of the comparison dimensions of public and private organizations have been identified (Rainey, Backoff, & Levine, 1976), and few empirical studies also have appeared in the literature (e.g., Buchanan, 1974, 1975; Paine, Carroll, & Leste, 1966; Porter & Mitchell, 1967; Rawls, Ulrich, & Nelson, 1975; Schuster, Colletti & Knowles, 1973) that have compared practices in the private and public sectors based on responses of top managers of several Israeli organizations from both the sectors. The private - public distinction is not a clear cut dichotomy because some government organizations are financed by user charges, and certain private organizations are primarily reliant upon government contracts (Solomon, 1986, p. 247). Dahl and Lindblom (1953), and Fottler (1981) proposed a

continuum between private and public sector organizations. Although conceptually management functions should be similar across organizations however, it has been contended that management functions are not the same for all types of organizations (Fottler, 1981; Rainey et al., 1976).

Environmental factors that have been identified in the literature as differentially affecting the organizations in the two sectors are differences in the degree of market exposure and the sources of funding (Lindblom, 1977; Turk, Wamsley, & Zald, 1979). Private sector executives are expected to be responsive to market and customer's demands and to implement organizational policies that facilitate efficient and economically rational action. The private sector economic dynamics is dependent upon market for resources, which provide incentives and automatic penalties that reinforce policies for cost reduction, operating efficiency, and effective performance (Solomon, 1986, p. 297).

Executives in the public sector are expected to maintain constituencies, seek multiple goals, and obtain funding through and appropriation process which is susceptible to political influences (Rainey, Backoff, & Levine, 1976). . The culture of the public sector is one of conflicting values, where the special restrictions and limitations posed by the competing objectives interfere with the actual attainment of productivity and efficiency goals (Von Mises, 1944). The common

practice of obtaining resources through an appropriation process creates conditions in which political considerations take priority and reduce the relative emphasis on operational and allocational efficiency (Drucker, 1973; Niskanen, 1971; Savas, 1974). Because public sector managers are also expected to meet demands of public responsiveness, they are faced with constant conflict between the goals of accountability and efficiency (Whorton & Worthley, 1981).

In the private sector, the extent to which certain actions will be encouraged and rewarded is generally determined by the degree to which they help meet the goals of increased efficiency. Conversely, the public sector, facing multiple and competing goals and additional constraints, might assign a lower priority to policies that reward efficiency, yielding more to the vagaries of the political climate (Solomon, 1986, p. 248). Relatively few Indian studies seem to have been conducted taking into account the variable ownership. Available ones include those by Bushan and Kaur (1983), Pareek (1985), Singh and Sinha (1986), and Sinha (1973).

The public and private organizations in India typically share a few common characteristics on one hand but also differ on several other aspects. Public organizations are supposed to have more bureaucratic structure than the private organizations. It was predominantly the post-independence era for India when the government started taking interest in

establishing government owned enterprise chiefly drawing upon the models and experiences of the organizations of pre-independence India, or foreign countries many of which were privately owned. On several occasions the executives of privately owned organizations were invited to head the public enterprises who brought along their values, norms, and culture in public organizations. But at the same time, due to government ownership many public sector organizations were headed by bureaucrats who were trained to follow bureaucratic norms (Singh & Sinha, 1986).

Parrek (1985) observed the following notable characteristics of public organizations; (a) public accountability, (b) relatively large size, (c) bureaucracy, (d) critical role in national economy, (e) social responsibility, and (f) focus on employee welfare. The role of public sector enterprises were defined in the industrial policy regulation of 1948 and 1956. The main objectives set for the public sectors were (a) to promote development and growth, (b) to promote the self-reliance in the strategic sectors and diversify the economy, (c) to prevent the concentration of economic power, (d) to reduce regional and social imbalances, (e) to effect equitable distributions of income adopting employment policy and other measures, and (f) to generate the surplus for reinvestment (Tiwari, 1981).

Most of the large business firms and organizations in India can be classified in three categories, namely (a) public sector, (b) semi-public sector or joint sector, and (c) private sector. In the present research however, only two categories would be considered that is public and private. The intermediary category semi-public sector, would be classified as either public sector or private sector, depending upon the predominant source of funding and control. The reason for doing so is that within the constraints, it is unlikely that a number of semi-public sector organizations would be approached that would be comparable to those in the purely public and purely private sectors.

No empirical study seems to have been conducted relating the ownership variables with the thrust variables in present study in Indian setting. The works by Indian authors of course in the context of different variables have been incorporated in the earlier part of this section on ownership.

It has been found that level of job satisfaction differed across the public and private ownership. Solomon (1986) found that satisfaction with job and organizational climate characteristics was significantly higher among the private sector as compared to public sector managers.

Role clarity. The degree to which members are aware of their roles is known as role clarity. Role clarity is determined by the amount of role ambiguity and role conflict

individual is facing. The less the ambiguity and conflict, the greater the role clarity. Role conflict is defined as the simultaneous occurrence of two (or more) role sendings such that compliance with one would make more difficult compliance with the other (Katz & Kahn, 1978). Role ambiguity occurs when the person does not know what is expected of him or her. Of these two determinants of role clarity, role ambiguity is considered to be more important and likely to be associated with job stress (House & Rizzo, 1972). It has been hypothesized that role clarity is important for creative problem solving, because perceptions of role stress as a result of role ambiguity can restrict the cognitive functioning and decrease the problem solving ability (Van Gundy, 1984).

Role clarity has also been studied in relation to perceived competence. It was found that perceived competence moderates the relationship between role clarity and job performance, that is, under conditions of role clarity, performance of employees with more perceived competence was higher than the employees with low perceived competence (McEnrue, 1984; Peters & O'Connor, 1980; Peters, O'Connor, & Rudolf, 1980). On the contrary it was proposed that the higher the employee ability, the lower the relationships between role perceptions and job performance or job satisfaction (Abdel-Halim, 1981, Schuler, 1980; Szilagyi et al., 1976).

Kahn, Wolfe, Quinn, Snoek, and Rosenthal (1964) found that people facing with role ambiguity, experienced lower job satisfaction, high job related tension, and low self-confidence. French and Caplan (cited in Cooper & Marshall, 1973) found role ambiguity to be significantly related to low satisfaction. Role ambiguity was found to be related positively with low self-esteem, low motivation to work and low job satisfaction (Margolis, Kroes, & Quinn, cited in Cooper & Marshall, 1973).

Lyons (1971) reported that role clarity was related directly to satisfaction and inversely related to tension, and propensity to leave.

The evidences show the association of role ambiguity with job dissatisfaction (e.g., Beehr, Walsh, & Taber, 1976; Greene, 1972; Hamner & Tosi, 1974; Johnson & Stinson, 1975; Paul, 1974; Rizzo, House, & Lirtzman, 1970). Studies (e.g., Brief & Aldag, 1976; Ivancevich & Donnelly, 1974; Tosi, 1971) found no relationship between role ambiguity and job satisfaction. Keller (1975) found that role ambiguity was negatively correlated with satisfaction with work, but was correlated to satisfaction with pay, coworkers, supervisor, and promotions.

Role overload. The concept of stress is a global concept. Research in this area deals with the specific aspects of stress. Such aspect could be role stress (Kahn, et al., 1964). Role overload is one form of the role stress. It has been defined as the "perception that one is being asked to do more than time

permits..." (Katz & Kahn, 1978, p. 598). Generally such overload is experienced as a conflict between quality and quantity, given the constraint of time. The constraints of quality, quantity, and time can not be met simultaneously, as a result of which role stress arises. This could have a negative impact on the employees of an organization. Given that the present study is focusing mainly on creativity, competence, and excellence, it could be interesting to see the relationship of role overload with these constructs.

French and Caplan (1973) have found that overload produces job dissatisfaction, lower self-esteem and many other symptoms of strain. Role overload has been found negatively related to job satisfaction (Porter & Lawler, 1965). Beehr, Walsh and Taber's (1976) reported that job characteristics moderates the stress-strain relationship.

Task structure. Task structure may be broadly defined as the demand characteristics of the task to be accomplished. Fleishman and Harris (1962) defined task structure as the manner in which a task supervisor organizes and define the worker activity such the way he or she plans the role that workers are to assume. Shaw (1963) identified four dimensions of task structure. They are (a) decision verifiability, (b) goal clarity, (c) goal path multiplicity, and (d) solution specificity.

Fleishman and Harris (1962) found that high task structure caused increased grievances by workers. Weed, Mitchell, and Moffitt (1976) found that high task structure was negatively correlated with general worker satisfaction. It was found that worker satisfaction decreased when tasks were highly structured and tasks roles were well defined (House, 1971; Sims & Szilagyi, 1975).

Theory Y. Theory X and theory Y are the two sets of assumptions about human nature propounded by McGregor (1960). He emphasized that management practices are usually based on these sets of assumptions. Theory X, which according to McGregor (1960) is traditional management practices, assumes that most people prefer to be directed, controlled by their supervisors, avoid responsibilities and above all they need safety and security. These sets of beliefs lead to the management practices, characterized by centralization of power and decision making, superior and subordinate pyramid and external control. According to this philosophy it is believed that human beings are and can best be motivated to work only on the basis of pay, reward, and fringe benefits. In terms of Maslow's (1954) need hierarchy, theory X considers only physiological and safety needs. Considering Maslow's (1954) need hierarchy McGregor found it important to note that once the physiological needs are satisfied they no longer remain the motivators.

Management practices more often concentrated on these physiological needs and safety needs. The problem that arises is that how to motivate people, because these conditions have made them stagnate to the extent that they never think of doing something other than these routinised work. Here in this context McGregor proposes that a different set of assumptions, that is, 'theory Y' should be the guideline of the management practices. These assumptions are based on the philosophy that human beings are social animals and they want to get social recognition and try to maintain their self-esteem which serves as the basis for recognition. Lastly they want to actualize their potentials. The assumptions proposed by McGregor (1960, pp. 47, 48) are as follow.

1. The average human being does not inherently dislike work.
2. Man will exercise self-direction and self-control in the service of objectives to which he is committed.
3. Commitments to objectives is a function of the rewards associated with their achievements.
4. The average human being learns, under proper conditions, not only to accept but to seek responsibility.
5. The capacity to exercise a relatively a high degree of imagination, ingenuity, and creativity in the solution of organizational problems is widely: not narrowly distributed in the population.

6. Under the conditions of modern industrial life, the intellectual potentialities of the average human being are only partially utilized.

McGregor's theory Y incorporates concept of integration which means the organizational effectiveness can be increased if the members of the organizations can achieve their own goals best by directing their efforts towards success of the enterprise. Theory Y is an integration of the goals of worker and the goals of the organization.

Theory Y may not imply the permissive or soft management practices rather it should be constructed as leading to the management practices which emphasize the potential for human growth and achievement and are supportive and participative.

Empirical evidences suggest that subordinates who perceive their superiors as possessing a theory Y view, tend to be more satisfied with their jobs (Filman, 1973).

The concept of theory Y is consistent with some of the organizational theories such as those of Likert (1961) and Argyris (1962) in its portrayal of the conflict between the goals of individual and the goals of organization. Theory Y, however, included a concept (of integration) that allows for the integration of the goals of the worker and the goals of the organization.

Theory Z. Theory Z is an approach to managing organizations that was identified by Ouchi (Ouchi, 1981; Ouchi & Jaeger, 1973; Ouchi & Johnson, 1978) as particularly appropriate for many situations in changing American society. The ideal type Z was construed to be a hybrid of the American (type A) and the Japanese (Type J) forms of organization. Ouchi argued that organizations have their roots in the culture of society in which they evolve and flourish. Therefore organizational form should be congruent with the cultural form or society in order to yield positive outcomes. Thus each of the types A, J, and Z could yield either positive negative outcomes for the society depending on certain environmental conditions. Type A represents the western organizations especially the North American and Western European forms. Type J represents the Japanese and main land Chinese forms, and type Z is an emergent form which is particularly suited to the united state of America today (Ouchi & Jaegar, 1973, p. 307). Each ideal type contains seven dimensions. These are length of employment, the mode of decision making, responsibility, speed of evaluation and promotion, the mode of control, the degree of specialization of career path, and the degree of holism in viewing others. In terms of these dimensions the type A (American) organizations are characterized by decision making, individual responsibility, rapid evaluation and promotion, explicit formalized control, specialized career path, and segmented concern. In contrast

type J (Japanese) organizations are characterized by lifetime employment, consensual decision making, collective responsibility, slow evaluation and promotion, implicit informal control, nonspecialized career path, and holistic concern. The characteristics of both the types emerged presupposedly due to the fact that the two types of organizations manifest the heritage of the culture in which they are embedded. However, it is argued that more appropriate could be the type Z organization which combines a basic cultural commitment to individualistic values with a highly collective, nonindividual pattern of interaction. It simultaneously satisfied old norms of independence and present needs for affiliation. The characteristics of a type Z organization are long term employment, consensual decision making, individual responsibility, slow evaluation and promotion, implicit, informal control with explicit formalized measures moderately specialized career path and holistic concern, including family (Ouchi & Jaeger, 1978, p. 311).

The important consideration in the theory Z kind of theorization is that of situation and time specific cultural relevance. This concern may not be completely ignored considering the fact that cross cultural studies, at least, in some areas of research, have established cross cultural variations in terms of several social scientific variables. Kluckhohn (1951) defined culture as ".... patterned way of

thinking, feeling and reacting, acquired and transmitted mainly by symbols, constituting the distinctive achievements of human groups, including their embodiments in artifacts; the essential core of culture consists of traditional (i.e., historically derived and selected) ideas and especially their attached values" (p. 36). And Hofstede (1934) defines culture as the collective programming of the mind which distinguishes the members of one human group from another. According to him, culture includes system of values; and value are among the building blocks of culture. Culture is to a human collectivity what personality is to an individual (p. 21).

Given that culture includes the constructs of values and the "personality" of a human collectivity, it may serve as an useful reference point for the understanding of organizational behavior because organizations are also a human collectivity (A.K. Sinha, 1987). There are reasons to believe that India is a unique culture consisting of a typical value system in several ways. This observation has been made by several authors (A.K. Sinha, 1987; Carstairs, 1971; Chattopadhyay, 1975; Dayal, 1976a, 1976b, 1976c; D. Sinha, 1972; J.B.P. Sinha, 1980, 1970; J.B.P. Sinha & Mira Sinha, 1974; Kakar, 1971; Myrdal, 1968; Spratt, 1966; Taylor, 1948). Fox (1975) observed certain characteristics of traditional Japanese management such as preference for personalized relationship, emotional dependency, and family type organizations. These are some of the things

that have been noted to be present in Indian culture as well by A.K. Sinha (1987) and J.B.P. Sinha, (1980), among others. In an extension of the earlier work on theory Z Ouchi (1984) identified the M-Form (Multidivisional form) organizations which can be thought of as the middle position between the U-Form and H-Form organizations. U-Form, more commonly known as the functional organization is unified in the sense that it can stand only as a unity (p. 17). H-Form, or holding company is one in which operating units are in unrelated business. The M-Form organization is one in which operating units are partially interdependent (p. 22).

In fact one can sense the roots of M-Form entrenched in theory Z. There are two things that need to be considered. One is that both the Indian as well as the Japanese society favoured a kind of structure that is found in traditional Indian family. Second is that India is rapidly moving toward the industrialized or post-industrialized societal era. Considering the facilities of technology transfer these days, at best Indian work organizations could be about ten years (and not more) behind the American organizations, at least in certain specified sectors of production. Geographically and tradition wise Japan is nearer to India compared to America. However, the structure and management pattern of most organizations in India would come nearer to America than Japan. Thus logically the prescription (with certain Japanese ingredient, i.e, theory Z)

that held good for American organizations ten years back should also be giving at least partially positive results in Indian setting. Considering the fact that the theory Z prescriptions have remained empirically untested in Indian work organizational work setting it was thought to be interested to include the theory Z as a variable in the present study.

However, the concept of theory Z has come under attack on several grounds (Sullivan, 1983). The theory has not received much empirical support yet. According to Sullivan theory Z inherent contradictions, i.e., consensus decision making and collective responsibility could be viewed as a response to nonspecialization, lifetime employment and promotion by age in Japanese theory Z firms rather than coequal incentives. If a manager in thought specialization got promoted automatically for a job for which he is not competent enough he will have to rely on his or her subordinates for any decision making as well as the taking responsibilities. Consequently consensual decision making and collective responsibility emerge. And these could not be regarded as incentives to trust and intimacy so much as by products of Japanese practices of lifetime employment and nonspecialized career paths (p. 138). Sullivan (1983) contented that theory Z is really a modern variation of Durkheim's structuralist sociological work rather than a Japanese developed organization theory.

In the present research the major consideration is not whether theory Z is effective or ineffective in any other culture or society, nor is it basically from Japanese or any other cultural grounds. It is the absence of empirical knowledge on this variable in Indian work organizational setting that had led the investigator to include this variable in the present research.

Organization Related Outcome

As mentioned earlier, one of the thrust variables in this research was excellence, a construct broadly defined as surpassing the existing standards of performance. This was in an attempt to reach beyond the traditionally employed criterion of effectiveness against which most aspects of organizational dynamics are evaluated. Nevertheless, organizational effectiveness remains to be an important variable. Firstly because this is an organizational level outcome variable of long standing in the literature. Secondly, it was considered useful to include this variable as it would serve the purpose of a recognized anchor for the exploration of the construct of excellence the nature, value, and utility of which remains to be established. Since the construct of excellence was operationalized to become a person level outcome in this research, the only major organization level outcome variable included was organizational effectiveness.

Organizational effectiveness. An important goal of organizations is to be effective. Effectiveness is a multidimensional concept (Cameron, 1978, 1936; Georgopoulos & Tannenbaum, 1957). It includes many aspects, for example, goal attainment, making a profit, staying within the budget, social responsibility, making efficient use of inputs relative to outputs, producing output, and survival etc. One of the comprehensive presentations of multiple models of organizational effectiveness is by Cameron and Whetten (1983).

Traditionally, organizational effectiveness has been viewed in terms of the objective criteria that is, organizational goals (Etzioni, 1975; Hall, 1980; Price, 1968; Steers, 1977). However, some of the recent studies have attempted to define organizational effectiveness from the subjective viewpoints of organizational participants or constituents (Connolly, Conlon, & Deutsch, 1980; Cummings, 1977; Kantor & Brinkerhoff, 1981; Kaeley, 1978, 1984; Pfeffer & Salancik, 1978; Veldsman, 1982; Zammuto, 1982). Schien (1983) defined organizational effectiveness as capacity to survive, adapt, maintain itself and grow, irrespective of the specific functions organization fulfills. The approaches to define organizational effectiveness can be distinguished as input, throughput, and output approaches. Input approach views organizational effectiveness as ability

of an organization to exploit its environment in the acquisition of scarce and valued inputs (Hirsch, 1975; Katz & Kahn, 1966; Yuchtman & Seashore, 1967). Organizational effectiveness, according to throughput approach, is ratio of inputs to outputs (e.g., Argyris, 1962; Katz & Kahn, 1978) or in terms of assets of an organization (e.g., Bennis, 1962; Likert, 1967; Pfeffer, 1977). The output approach sees the organizational effectiveness as the degree to which organization realized its goals (Etzioni, 1964; Price, 1972; Steers, 1977).

The problem solving framework of organizational effectiveness developed by Georgopoulos (1970) emphasized that organizations can be effective to the extent they successfully solve the most generic problems such as coordination, adaptation, external maintenance, resource acquisition, resource allocation, integration, strain amelioration and goal attainment. Each of these problems must be solved continuously to ensure the system's survival and growth.

Organizations, today, are operating in a dynamic environment marked by rapid technological change. Social and political changes taking place throughout the world create a constant demand for new services and products, as well as the expansions of existing ones. Consequently organizations undergo these changes and look for some ways

of tackling the problems arising from adoption of the changes. In this context the problem solving perspective has been taken in the present study. Organizations have long been viewed as problem solving entities (March & Simon, 1958).

No empirical evidence seems to exist defining the relation of organizational effectiveness with major thrust variables included in the present study that is creativity, competence, and excellence. However it was found that organizational effectiveness is not dependent on effectiveness of either universalistic or contingent managerial styles (Hendrix & McNichols, 1984). In one study it was found that factors such as policy, process, structure or behavior do not necessarily affect the effectiveness or productivity of the organization when measured in terms of profits, turnover or manpower turnover (Sunderajan, 1983).

Person Related Outcomes

It needs to be reiterated that individual in organizational setting rather than the organization itself has been central in this research. Consequently the individual level or person related outcomes would be important considerations. Three such outcome variables were included in this study. They were excellence, job satisfaction, and personal effectiveness. Excellence has already been described. Description of the other two variables follow.

Job satisfaction. Job satisfaction has been defined as a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences (Locke, 1976, p. 1300). Traditionally, job satisfaction has been conceptualized as unidimensional concept. However, it has been widely accepted now that job satisfaction is a multidimensional construct and various dimensions of satisfaction should be related to the specified independent variables.

Several reviews of the relationship between job satisfaction and job performance (Brayfield & Crockett, 1955; Herzberg, et al., 1957; Schwab & Cummings, 1970; Vroom, 1964) concluded no strong pervasive relationship between these two variables. Despite these negative conclusions, several research question in this area have received much attention that is the question of causality between satisfaction and performance (Lawler & Porter, 1967; Organ, 1977; Schwab & Cummings, 1970; Siegel & Bowen, 1971) moderators of the satisfaction performance relationship such as the contingency or rewards (Jacobs & Solomon, 1977; Lawler, 1973), situational constraints (Bhagat, 1982; Herman, 1973), self-esteem (Jacobs & Solomon, 1977, Lopez, 1982), pressures for production (Triandis, 1959), and reciprocity norms (Organ, 1977). Recently Iaffaldano and Muchinsky (1985) in their meta-analytic study found a very little relationship between job satisfaction and job performance.

Empirical researches relating this variable with other variables in the present study have already been mentioned in connection with other variables described earlier.

Personal effectiveness. Personal effectiveness from the problem solving viewpoint refers to an ability to solve four system problems. They are adaptation, goal attainment, integration, and latency or tension management. It also refers to an ability to perform the job effectively (Sutton & Ford, 1982). Effective performance has been defined as the attainment of specific results or outcomes by performing the job, while maintaining the congruence with the policies, procedures, and conditions of the organizational environment (Boyatzis, 1982).

Not many studies relating this variable with other variables of interest exist. The only study relevant to the present one explored the relationship between several competencies and effective job performance, and it was found that competencies increase the effectiveness of performance (Boyatzis, 1982).

Up to this point the existing theoretical and empirical body of knowledge with regard to the variables in the study, especially within the framework of organizational behavior, was presented. It may be reiterated that this work would focus on the constructs of creativity, competence, and excellence in the main. The underlying dimensions of

these and the other variables in the study would be unravelled using the factor analysis. The relationships among the dimensions pertaining to the variables would be explored using various statistical techniques including correlations, canonical correlations, discriminant analysis, analysis of variance etc. Attention would be focused so as to decipher some of the "antecedents" and "consequences" of creativity, competence, and excellence. Speaking of creativity, competence, and excellence, precious little has been gathered by way of empirical knowledge specially in the area of organizational behavior. This would pose certain difficulties in carrying out this research in confirmatory perspective or proceeding with preconceived hypotheses. It is proposed to carry out this research in an exploratory manner. Considering that this work may be taken to be an initiation of investigation into the structure and dynamics of the dimensions of creativity, competence, and excellence and other related variables, the findings of this study, it is hoped, would furnish the foundation for confirmatory or hypothesis based research in future.

For the present research no specific hypothesis would be made. Nonetheless, certain research questions would be raised and sought to be answered in the result section based on the research findings the importance and implications of the variables in the study would be enunciated and with

a backdrop of the limitations realized during the execution of this research, suggestions for future research would be offered. Having dispensed with the hypothesis building or confirmatory approach at this stage and pledging to take up the research questions in the result section we now turn to the method section.

Chapter 2

Method

Sample

The sample consisted of 290 male executives drawn from the low, middle, and high hierarchical levels of the respective organizations. Six public and four private, a total of ten work organizations located in three big cities of north India were included in the sample. The organizations included in the sample could mainly be classified as either public or private sector. Table 1 lists certain characteristics that may help in an overall visualization of the sample.

Measures

Most of the measures used in this study were either a modified version of the original source or were freshly developed by Sinha and Shukla (1935) on the basis of the writings of the respective authors. Modifications included changes in the sentence constructions, wordings, scaling, response categories, and selective use of items and ideas. The exact form of the measures appear in Appendix A. The broad descriptions of measures follow.

Form 1: Creative thinking process questionnaire. This form was based on the writing of Khandwalla (1984) and consisted of 39 items.

Form 2: Creative abilities questionnaire. It consisted of 7 items based on writing of Khandwalla (1984).

Organization no.	No. of employees	Industrial categorization	Ownership	No. of respondents' hierarchical levels		
				Low	Middle	High Total
1.	4275	Textile	Private	6	11	7 24
2.	3800	Textile	Private	10	9	7 26
3.	3600	Textile	Private	10	9	7 26
4.	3400	Textile	Public	9	10	8 27
5.	4200	Textile	Public	13	12	10 35
6.	3860	Automobile	Private	5	9	8 22
7.	4000	Automobile	Public	11	12	10 33
8.	3254	Fertilizers	Public	18	11	10 39
9.	1200	Electronics	Public	12	10	12 34
10.	4000	Engineering	Public	7	8	9 24
				Total = 290		

Form 3: Perceived job competence questionnaire. This form was adopted from Wagner and Morse (1975) and consisted of 23 items measuring sense of competence in work setting.

Form 4: Excellence questionnaire. This form was based on the writing of Peters and Waterman (1982). It consisted of 16 items.

Form 5: Person's environmental forces questionnaire. It was measured through a modified version of Khandwalla's (1984) scale of person's environment. It consisted of 48 items measuring four facets of environment (a) childhood, (b) school, (c) present social and (d) present work environments.

Form 6: Biographical information questionnaire. Personal background information was obtained through a biographical inventory that consisted of 12 items.

Form 7: Intrinsic motivation questionnaire. This form was adopted from Warr, Cook, and Wall's (1979). It consisted of 6 items measuring intrinsic work motivation.

Form 8: Locus of control questionnaire. Locus of control was measured through a modified version of Tudor's (1972) scale and consisted of 4 items.

Form 9: Need for pioneering. It was adopted from Khandwalla's (1984) scale consisting of 10 items.

Form 10: Need for self-actualization questionnaire. This was adopted from Khandwalla's (1984) scale consisting of 10 items.

Form 11: Personal characteristics questionnaire.

This form consisted of 34 items and was adopted from Torrance (1965) and Khandwalla's (1984).

Form 12: Self-esteem questionnaire. Self-esteem

was measured through self-esteem assessment questionnaire developed by Hill (1984). The questionnaire comprises three sections; only section one was adopted for the present study.

Form 13: Climate questionnaire. Climate was measured

through a 30 item questionnaire that consisted of items based on the writings of Khandwalla (1983), Litwin and Stringer (1968), and Pareek (1979); apart from some newly constructed ones.

Form 14: Job characteristics questionnaire. Job

characteristics measure was adopted from Warr, Cook, and Wall's (1979) that consisted of 10 items.

Form 15: Leadership styles questionnaire. The

leadership measure was primarily based on the writing of Sinha (1980). Sinha and his associates have been using questionnaires measuring leadership styles purporting to measure the components of bureaucratic, authoritarian, laissez-faire, nurturant, and participative styles. Experience of the investigators had shown that it is basically the nurturant and participative styles that are conducive to effectiveness in most cases. Therefore a

modified version of Sinha's (1981) questionnaire of leadership purporting to measure only the components of nurturance and participativeness separately was used. It consisted of 20 items.

Form 16: Role clarity questionnaire. This questionnaire was taken from Singh (1986). It consisted of 4 items.

Form 17: Role overload questionnaire. This form was taken from Singh (1986). It consisted of 5 items.

Form 18: Task structure questionnaire. Task structure was measured through a modified version of Shaw's (1963) measure and consisted of 4 items.

Form 19: Theory Y questionnaire. This form was based on the writing of McGregor (1960). It consisted of 4 items.

Form 20: Theory Z questionnaire. This form was based on the writing of Ouchi (1981). It consisted of 14 items.

Form 21: Organizational effectiveness questionnaire. Organizational effectiveness was measured through 4 items questionnaire developed by Sutton and Ford (1982).

Form 22: Job satisfaction questionnaire. This form consisted of 20 items purporting to measure job satisfaction. Items were taken from Singh (1986) and Warr, Cook, and Wall (1979).

Form 23: Personal effectiveness questionnaire. This form was adopted from Sutton and Ford (1982) and consisted of 4 items.

Additional measure of competence. Competence, in this study, was conceptualized as proficiency in the aspect(s) of the job that a role incumbent had been assigned in connection with job. A job is a combination of fragmented work aspects. This conceptualization could be analogous to what is termed as technical competence by Argyris (1962).

This study incorporated the concept of competence in terms of job competence. A measure of perceived job competence was used which has already been mentioned. However, it was visualized that job competence may also be conceptualized as a fragmented construct. The measures to be shortly described were the additional measures that purported to tap this fragmentation. Two situations may arise with regard to the competence of a role incumbent. First, a role incumbent may be competent in almost all the relevant work aspects of the job. If such is the case, the role incumbent would be said to have a generalized competence. The incumbent need not have an equal amount of competence in all the aspects. What is meant by generalized competence is that the person would have a fairly high degree of competence in a large number of work relevant aspects, of course ideally he or she should have fairly high competence in all the aspects.

Secondly, it is possible to conceive of a situation where the person does not have a high degree of competence

in a large number of relevant work aspects but has a fairly high degree of competence in those aspects of the job which may be termed as crucial. This person comes close to a specialist. It would depend on the situational requirements whether or not a specialist is the most effective person. In some cases, only a specialist can handle a work; in some others a specialist can be an okay sort of person because although he or she is not very competent in a number of job related aspects, he or she is competent enough in the crucial aspects which matter most in a job assignment; in yet another circumstance a specialist would be a rather poor choice in comparison to a generalist if the situation so demands. Nevertheless, conceptually it is possible to conceive of a person with a high degree of competence in limited but crucial areas of the job. If such is the case the person would be said to have specific competence in crucial areas.

In light of the above argument it seems that there is a need to identify the role incumbents having (a) generalized competence, as well as (b) specific competence. Two indexes formulated by Sinha (1985) for generalized and specific competence were used for the purpose. The questionnaire used for the measurement of these constructs appear in Appendix A. The process involved in generating these indexes involves going through several steps. They are described below.

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Index of generalized competence. At the first step, the respondent would be asked to give the approximate number of major work related areas that would be there in his or her job. Suppose the respondent says that there are five such areas.

At the next step the respondent would be required to mention those areas in writing. He or she would also be required to give the percentage of competence in those areas as well as the ranking of importance with regard to the job.

An area of high competence would be defined as the area or aspect of the job in which the respondent claims to have competence of more than or equal to seventy per cent. Suppose the respondent enumerated four areas, and in one of them he or she claimed to have the level of competence to be equal to or more than seventy per cent. Therefore the number of areas of high competence would be taken to be 1. Given that the total number of work areas relevant to the job was given to be 4 and that the number of the work areas of high competence was given to be, the index of generalized competence would be computed as follows.

$$\begin{array}{lcl} \text{Index of} & & \text{Area of High competence (AHC)} \\ \text{generalized} & = & \hline \text{competence (IGC)} & & \text{Total number of Areas Provided (TAP)} \end{array}$$

In the above example, AHC = 1, TAP = 4, and therefore

$$\text{IGC} = \frac{1}{4} \times 5 = 1.25 = 1 \text{ (Recoded as mentioned below).}$$

Since it is possible to have ultimate values of the indexes of competence in real numbers, as in the case mentioned above, for convenience sake the final outcome would be recoded to arrive at an integer value with a range of five points for further use. The coding scheme was as follows.

0.00 - 1.40 = 1, 1.50 - 2.40 = 2,

2.50 - 3.40 = 3, 3.50 - 4.40 = 4,

4.50 - 5.00, and greater = 5.00.

It may be noted that in this coding scheme a gap of 0.90 is maintained except in case of first and last categories which should have been 0.50 - 1.40, and 4.50 - 5.40 respectively.

Index of specific competence. The index of specific competence tells us whether the area in which the respondent has high competence is also a crucial area or not. In order to find out the index of specific competence (ISC) one would require to go through the following steps.

1. Find out the areas of high competence in the above example

2. Find out 30 per cent of this number. Thirty per cent was postulated to be a reasonable proportion out of hundred to designate the cruciality of the areas. This thirty per cent proportion, instead of any absolute number

such as first three or first four etc., was preferred because theoretically it was possible for respondents to give highly variable number of areas both as total number of areas as well as areas of high competence. For example a person could say that the total number of important areas was just 3 out of which he or she had high competence in 2. Whereas another person might have said that the total number of important areas was 15 and he or she had high competence in five of them. Keeping a fixed number of ranks such as first three as an index to determine the cruciality of the area in which the person had possessed competence, for both the persons, could have been unjustified. Given that the number of job relevant work aspects would usually range (determined on the basis of pilot study) between 1 and 10, the thirty per cent; accordingly, would be between 0.30 and 3.00. For convenience sake the numbers between 0.30 and 1.2 were coded as 1; between 1.5 and 2.4 were coded as 2; and 2.7 and 3.00 were coded as 3. It should be noted that upper limits of number in these three categories were less than 1.5, 2.5, and 3.5; and accordingly were coded as 1, 2 and 3. Thus 0.30 = 1, 0.60 = 2, 0.90 = 3, 1.20 = 4, this entire category was coded as 1. Again 1.50 = 5, 1.80 = 6, 2.10 = 7, 2.40 = 8; this entire category was coded as 2. Similarly 2.70 = 9, and 3.00 = 10; this category was coded as 3. In this scheme numbers from 1 to 10

represent the number of relevant work aspects in the job that would be given by the respondent. The number from 0.30 to 3.00 represent the 30 per cent of the numbers from 1 to 10 respectively.

The coding scheme is summarized below.

30 per cent of 1 = 0.30	:	
2 = 0.60	:	
3 = 0.90	:	Coded as 1.
4 = 1.20	:	
5 = 1.50	:	
6 = 1.80	:	
7 = 2.10	:	Coded as 2.
8 = 2.40	:	
9 = 2.70	:	
10 = 3.00	:	Coded as 3.

3. The per cent of competence entries corresponding to the ranks selected in step 2 would also be marked.

4. Count how many of these are equal to or above seventy per cent.

5. This count will be the number of crucial areas of high competence. This number would be divided by the number of areas of high competence (found at setp 2), and multiplied by 5 (a constant). The final outcome would be the index of specific competence.

Thus the person, in the example, gave 4 as the number of total relevant areas and 1 was the number of the claimed areas of high competence. Now 30 per cent of 1 would be 0.30 that would be coded as 1. So one would need to look at the percentage of competence only up to first rank. Suppose the per cent of competence in the area corresponding to rank 1 was given to be 90 per cent. This is higher than seventy per cent. So the number of crucial areas of high competence remains to be one. This number would be divided by the areas of high competence found at the step no. 2 which coincidentally is also one. Therefore the index of specific competence would be as follows.

$$ISC = \frac{1}{1} \times 5 = 5.$$

Procedure

A list of the work organizations located in north India employing a minimum of 1000 employees was made using the documented sources of information. This criterion of 1000 was adhered just in order to avoid the inclusion of "small" organization. The geographical region of the sample was kept to be north India for convenience sake. The list of the organizations was initially prepared with a view to have variations on a number of structural characteristics. Letters of request were sent for obtaining permission to collect data in particular organizations, to which most organizations responded favourably. However, considering

the time constraint, it was decided to include 10 organizations. With this constraint it was not possible to select organizations according to various structural characteristics that were initially thought to be investigated, and on which it could have been possible to get more variance. Finally, only one structural characteristic, namely ownership (i.e., public and private) was focused upon that would presumably account for some variance.

As a matter of fact the study did not or rather could not make use of random sampling procedure in the selection of organizations. The constraints were too many regarding resources and time.

It was decided to take at least 20 respondents from each organization. The respondents in each organization would belong to three hierarchical "levels". The selection of respondents in each of the low, middle, or high hierarchical level was based on the official documentation that was made available through the courtesy of the respective organizations. The exact number of respondents under each level and organization appears in Table 1. An attempt was made to match the departments across various organizations. However, it could not be possible in a few cases.

The respondents were approached individually mostly in duty hours with the permission of their respective authorities. Structured interview schedule was used for collection of the data. Complete confidentiality of data was promised to all the organizations and respondents.

Chapter 3

Results

The study was planned and executed largely within the framework of multivariate conceptualization both between as well as within constructs or variables included in this study as opposed to more popular univariate conceptualization of constructs. Owing to the complexity involved in conceptualization and treatment of variables in a real life setting, it was argued that there could always be a possibility of multidimensionality underlying the constructs that reflect social realities. Identification of such dimensionalities would be an investigative subject with a view to realize their precise nature and composition. The patterns of dimensions underlying a construct may interact with the patterns underlying some other construct to produce a representation that is considerably more complex, but nevertheless a more authentic pattern reflecting the situational dynamism of social reality compared to what one would normally get through an unidimensional conceptualization of constructs.

In consonance with the stand taken, all multi-item questionnaires purporting to measure the respective relevant constructs were subjected to factor analysis (principal factoring with iterations and oblique rotation). In using factor analytic results the following "stands" were taken.

(a) extraction of factors was stopped after eigen value dropped below unity (except where factor solutions had to be forced in limited number of factors due to some methodological requirements); (b) the belongingness of items to specific factors was kept nonoverlapping in the sense that no item was included in more than one factor; (c) only those items were retained in a particular factor which had a loading of equal to or more than 0.50 on that factor but did not have a cross-loading of equal to or more than 0.30 on any other factor simultaneously; (d) single item factors, that is, if a factor had only one item left in it that had a loading of equal to or more than 0.50, either by itself or as a result of adherence to the stand mentioned in clause 'c' above; were not retained because single item factors are known to be notoriously unreliable; (e) in tabular presentation of the factor analysis results, items discarded due to various stands mentioned above would be reported under heading "unclassified items", however, for further analysis only those items would be used that satisfied various criteria of item selection mentioned above.

It should be noted that the above stands were taken because factor analysis was used primarily as a data reduction technique and with a view to identify underlying "dimensions" of various constructs that comprised items that had "clear and high loadings" on respective factors.

And therefore the use of factors for subsequent analyses should be taken as if the factors were variables or constructs yielding composite scores on sub-scales of super-ordinate constructs rather than being "factors" in strict statistical sense.

Once the factor composition were selected that had a minimum of two items with high loadings on a factor, a panel of five persons having a master's degree in psychology was employed to name the factors. The factor naming was accomplished keeping in view the loadings, the item contents, and the constructs from which respective factors had been extracted. A brief description of various forms of questionnaire measuring the constructs used in this study, and factors obtained thereof follows.

Exploring the Underlying Dimensions of the Constructs: The Factor Analysis Results

Form 1: Creative thinking process questionnaire. This form consisted of 39 items yielded seven factors when subjected to factor analysis that were named as follows (a) Analytical Approach to Problem solving (AAPS), which consisted of item numbers 1 and 2, (b) Incubation and Illumination (II), which consisted of item numbers 3 and 4, (c) Optimizing Approach to Problem solving (OAPS), which consisted of item numbers 5, 6, 7, and 8, (d) Nonconventional Ideation (NCI), which consisted of item 9 and 10, (e) Associative Approach

to Problem solving (ASAPS) which consisted of item numbers 11, 12, and 13, (f) Synthesizing Approach to Problem solving (SAPS), which consisted of item numbers 14 and 15, and (g) Analogical Approach to Problem solving (ANAPS), which consisted of item numbers 16 and 17.

Form 2: Creative abilities questionnaire. It consisted of 7 items and yielded a single factor that was named creative Abilities (CA). This factor was composed of item numbers 40 to 46.

Form 3: Perceived job competence questionnaire. This form consisted of 23 items and yielded six factors which were named as follows. (a) Competence Thema (CT), which consisted of item numbers 47 to 51, (b) Feedback and Accomplishment (FA), which consisted of item numbers 52 and 53, (c) Environment Mastery (EM), which consisted of item numbers 54 and 55, (d) Job Involvement (JI), which consisted of item numbers 56 and 57, (e) Personal Target Realization (PTR), which consisted of item numbers 58, 59, and 60, and (f) Work Inclination and Control (WIC), which consisted of item numbers 61 and 62.

Form 4: Excellence questionnaire. This form consisted of 16 items. Factor analysis yielded four significant factors out of which three were retained, namely (a) Quality conscious Entrepreneurial Excellence (QCEE), which consisted of item numbers 70, 71, and 72, (b) Excellence Recognition (EXR), which consisted of item numbers 73 to 76, and (c) Output Excellence (OEX), which consisted of item numbers 77 and 78.

Form 5: Person's environmental forces questionnaire.

This form consisted of 48 items, culminating in thirteen factors out of which eleven were retained. They were named as follows. (a) Feedback and Opportunity (in Preprofessional Environment) or FO(PPE), which consisted of item numbers 36, 37, and 38; (b) Stimulation, Encouragement, and Feedback (in Work Environment) or SEF(WE), which consisted of item numbers 39, to 41; (c) Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment) or EPCI(PPE & PE), which consisted of item numbers 42 to 45; (d) Innovation Values (in Preprofessional Environment) or IV(PPE), which consisted of item numbers 46 to 49; (e) External Facilitation (in Extrawork Environment) or EF(EWE), which consisted of item numbers 50, 51, and 52; (f) Autonomy and Result Orientation (in Extrawork Environment and Childhood Environment) or ARO(EWE & CE), which consisted of item numbers 53, 54, and 55; (g) Freedom of Belief and Action (in Extrawork Environment) or FBA(EWE), which consisted of item numbers 56, 57, and 58; (h) Penalty for Shabby Performance (in Professional Environment) or PSP(PE), which consisted of item numbers 59 and 60; (i) Freedom for Divergent Thought (in Professional Environment) or FDT(PE), which consisted of item numbers 61 and 62; (j) Stimulation for Creativity (in Extrawork Environment) or SC(EWE), which consisted of item numbers 63 to 66; and (k) Innovation

Values (in Professional Environment) or IV(PE), which consisted of item numbers 119 to 122.

Form 6: Biographical information questionnaire. This form consisting of 12 items yielded four factors out of which only one factor was retained owing to our stand. It was named as Seniority (S) consisting of item numbers 134 and 135.

Form 7: Intrinsic motivation questionnaire. This form consisted of 6 items. Factor analysis yielded but only one significant factor, namely Intrinsic Motivation, (IM) consisting of item numbers 146, 147, 148, and 149.

Form 8: Locus of control questionnaire. This form consisted of 4 items. Factor analysis yielded two significant factors. However, owing to the stands mentioned above, only one factor consisting of item numbers 152 and 153 was retained which was named Internal Locus of Control (ILC).

Form 9: Need for pioneering questionnaire. This form consisted of 10 items. Factor analysis yielded two significant factors. They were named as follows. (a) Passion for Innovation (PI), which consisted of item numbers 156 to 159; and (b) Passion for Distinctiveness (PD), which consisted of item numbers 160 and 161.

Form 10: Need for self-actualization questionnaire. This form consisted of 10 items. Factor analysis yielded two factors. However, only one factor consisting of item numbers 165 to 169 was retained which was named Need for

Self-actualization (NSA).

Form 11: Personal characteristics questionnaire. This form comprised 34 items and yielded nine factors out of which only four factors were retained that were named as follows. (a) Determined, Persistent, and Self-starter (DPS), which consisted of item numbers 176, 177, and 178; (b) Quiet, Bashful, and Reserved (QBR), which consisted of item numbers 179, 180, and 181; (c) Courteous, Popular, and Altruistic (CPA), which consisted of item numbers 182, 183, and 184; (d) Obedient, Willing to Accept Judgements (OWAJ), which consisted of item numbers 187 and 188.

Form 12: Self-esteem questionnaire. It consisted of 15 items that yielded six factors. Owing to the stands mentioned above, only one factor consisting of item numbers 212, 213, and 214 was retained. It was named Self-esteem (SE).

Form 13: Climate questionnaire. This form consisted of 30 items, and yielded six factors out of which four were retained. They were named as follows. (a) Expertise Recognition (ETR), which consisted of item numbers 227 to 232; (b) Decentralization (D), which consisted of item numbers 233 to 237; (c) Autonomy in Supervision (AS), which comprises item numbers 238 and 239; and (d) Skills Variety (SV), which consisted of item numbers 240 and 241.

Form 14: Job characteristics questionnaire. This form consisted of 10 items culminating in three factors out of which two were retained. They were named (a) Advancement Opportunity (AO), which consisted of item numbers 257 to 259; and (b) Task Identity (TI), which consisted of item numbers 260 and 261.

Form 15: Leadership styles questionnaire. This form consisted of 20 items that culminated in only one significant factor that was named Nurturant Participative Leadership Style (NPLS). It was consisted of item numbers 267 to 286.

Form 16: Role clarity questionnaire. This form consisting of 4 items yielded only one significant factor, namely Role Clarity (RCL), which consisted of item numbers 287 to 289.

Form 17: Role overload questionnaire. This form comprising 5 items, yielded two significant factors. They were named (a) Time Constraint (TC), which consisted of item numbers 291 and 292; and (b) Constraint of Change (CTC), which consisted of item numbers 293 and 294.

Form 18: Task structure questionnaire. This form consisted of 4 items, culminating in one significant factor, which consisted of item numbers 296 to 298. It was named Task Structure (TS).

Form 19: Theory Y questionnaire. This form consisted of 4 items and yielded only one factor, namely Theory Y (TY), comprising item numbers 300 to 303.

Form 20: Theory Z questionnaire. It consisted of 14 items, which yielded four factors out of which two were retained. They were named (a) Wholistic Concern (WC), consisting of item numbers 304 to 308; and (b) Informal Work Mechanism (IWM), which consisted of item numbers 309 and 310.

Form 21: Organizational effectiveness questionnaire. It consisted of 4 items and yielded one significant factor, namely Organizational Effectiveness (OE), comprising item numbers 318 to 321.

Form 22: Job satisfaction questionnaire. This form consisted of 20 items. Factor analysis resulted in four significant factors out of which three were retained. They were named as follows. (a) Satisfaction with Company Policies (SCP), which consisted of item numbers 323 to 325; (b) Intrinsic Job Satisfaction (IJS), which consisted of item numbers 326 and 327; and (c) Satisfaction with Job Security and Helping Others (SJSHO); which consisted of item numbers 328 and 329.

Form 23: Personal effectiveness questionnaire. It consisted of 4 items and culminated in only one significant factor. It was named Personal Effectiveness (PE), which consisted of item numbers 342 to 345.

Additional variables: Generalized and specific competence. In addition to the above described factors, two more variables had been included for the purpose of data analysis, namely Generalized Competence (GC) and Specific Competence (SC).

The Product-moment correlations between the various dimensions and/or variables included in this study, and corresponding means, standard deviations, and Cronbach's (1951) "Standardized" alpha coefficients (which may be comparable to Cronbach's statistic \bar{r}_{ij} (est.)) are given in Appendix C.

The Conceptual Scheme: Categorizing the Variables

This research endeavour incorporated twenty three constructs measured through 345 items culminating in fifty eight factors, that were obtained through factor analysis (principal factoring with iteration and oblique rotation) which met the criteria (described earlier) for retention of specific factors to be used in further analyses. Additionally two more variables (Generalized Competence and Specific Competence) were included. Thus in total this research made use of sixty factors or variables.

Conceptually the constructs incorporated in the study could be classified into five categories of variables. The categories would be (a) Person's Environmental Forces,

(b) Organizational Related Variables, including certain structure and process variables that could be thought of as the organizational attributes as opposed to the personal attributes of the role incumbents, (c) Person Related Variables, including attributes of the role incumbent such as characteristics, needs, motivation, abilities, and some of the personality variables, (d) Organization Related Outcome including Organizational Effectiveness, and (e) Person Related Outcomes, including measures of effectiveness, excellence (defined as surpassing the existing standards of performance in a given set-up), and satisfaction.

Eventually eleven factors (or variables) comprised the (a) Environmental Forces, fourteen factors comprised (b) Organization Related Variables, twenty seven comprised (c) Person Related Variables, one factor comprised (d) Organization Related Outcome, and seven factors comprised (e) Personal Outcomes.

Conceptually, a pattern of relationship among the five categories of the constructs was postulated. The schematic representation of the postulated pattern of relationships among the categories (and the major variables within them) is depicted in Figure 1. It may be noted that most statistical analyses (except analyses of variance) did not include Hierarchical Position and Ownership variables of Sector b.

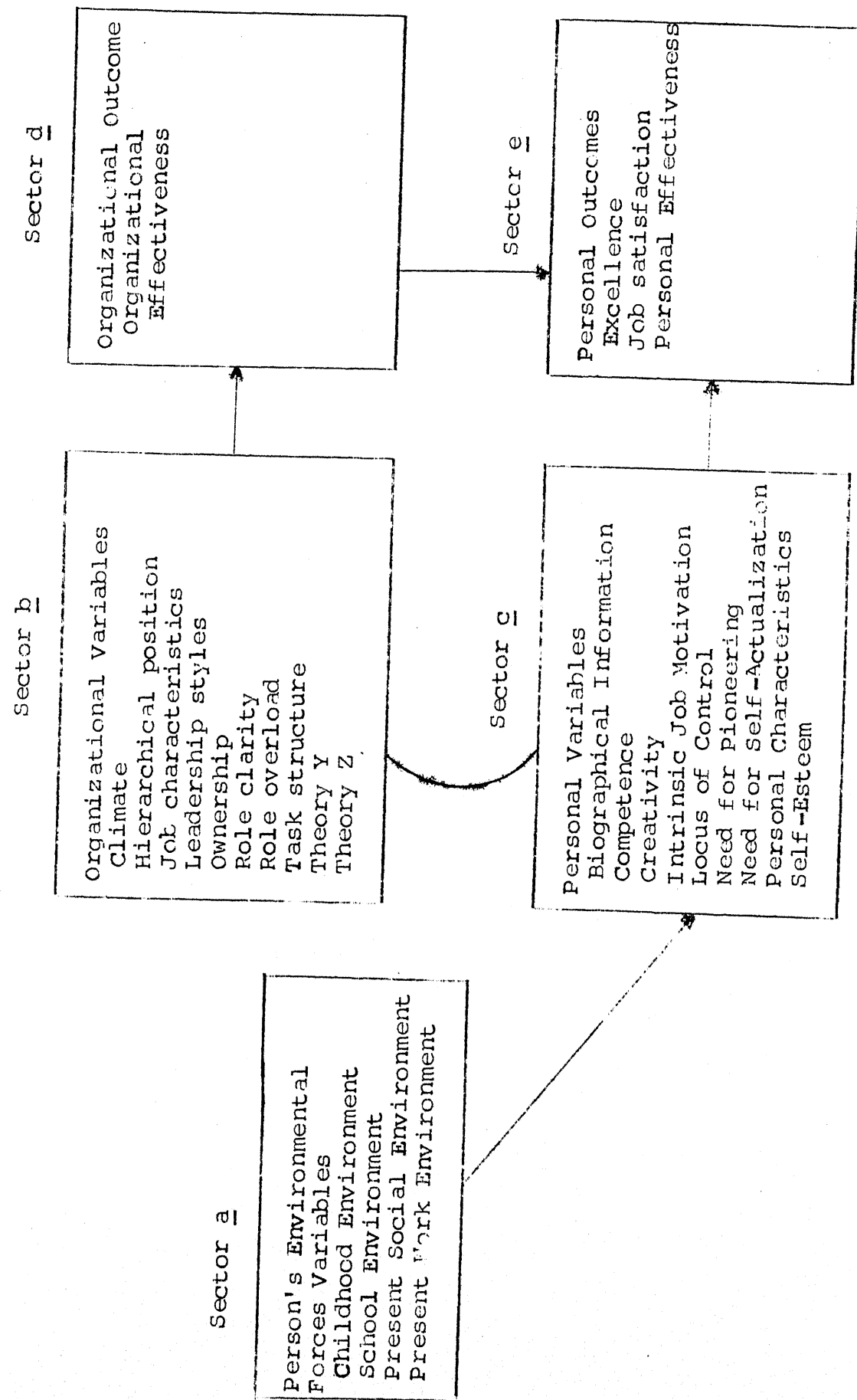


Figure 1. Conceptual scheme of relationships among sectors and variables.

Categories of Variables and their Dimensions

Various factors of the major variables obtained through factor analysis and positioned under the respective categories are listed below.

Sector a: Person's Environmental Forces

1. Feedback and Opportunity (in Preprofessional Environment) or FO (PPE).
2. Stimulation, Encouragement, and Feedback (in Work Environment) or SEF (WE).
3. Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment) or EPCI (PPE & PE).
4. Innovation Values (in Preprofessional Environment) or IV (PPE).
5. External Facilitation (in Extrawork Environment) or EF (EWE).
6. Autonomy and Result Orientation (in Extrawork and Childhood Environment) or ARO (EWE & CE).
7. Freedom of Belief and Action (in Extrawork Environment) or FBA (EWE).
8. Penalty for Shabby Performance (in Professional Environment) or PSP (PE).
9. Freedom for Divergent Thought (in Professional Environment) or FDT (PE).
10. Stimulation for Creativity (in Extrawork Environment) or SC (EWE).
11. Innovation Values (in Professional Environment) or IV (PE).

Sector b: Organization Related VariablesClimate

- 12. Expertise Recognition (ETR).
- 13. Decentralization (D).
- 14. Autonomy in Supervision (AS).
- 15. Skills Variety (SV).

Job Characteristics

- 16. Advancement Opportunity (AO).
- 17. Task Identity (TI).

Leadership Styles

- 18. Nurturant Participative Leadership Style (NPLS).

Role Clarity

- 19. Role Clarity (RCL).

Role Overload

- 20. Time Constraint (TC).
- 21. Constraint of Change (CTC).

Task Structure

- 22. Task Structure (TS).

Theory Y

- 23. Theory Y (TY).

Theory Z

- 24. Wholistic Concern (WC).
- 25. Informal Work Mechanism (IWM).

Sector c: Person Related VariablesBiographical Information

26. Seniority (S).

Competence

27. Competence Thema (CT).

28. Feedback and Accomplishment (FA).

29. Environment Mastery (EM).

30. Job Involvement (JI).

31. Personal Target Realization (PTR).

32. Work Inclination and Control (WIC).

33. Generalized Competence (GC).

34. Specialized Competence (SC).

Creative Abilities

35. Creative Abilities (CA).

Creative Thinking Process

36. Analytical Approach to Problem solving (AAPS).

37. Incubation and Illumination (II).

38. Optimizing Approach to Problem solving (OAPS).

39. Nonconventional Ideation (NCI).

40. Associative Approach to Problem solving (ASAPS).

41. Synthesizing Approach to Problem solving (SAPS).

42. Analogical Approach to Problem solving (ANAPS).

Intrinsic Motivation

43. Intrinsic Motivation (IM).

Locus of Control

44. Internal Locus of Control (ILC).

Need for Pioneering

- 45. Passion for Innovation (PI).
- 46. Passion for Distinctiveness (PD).

Need for Self-actualization

- 47. Need for Self-actualization (NSA).

Personal Characteristics

- 48. Determined, Persistent, and Self-starter (DPS).
- 49. Quiet, Bashful, and Reserved (QBR).
- 50. Courteous, Popular, and Altruistic (CPA).
- 51. Obedient, Willing to Accept Judgements (OWAJ).

Self-esteem

- 52. Self-esteem (SE).

Sector d: Organization Related OutcomeOrganizational Effectiveness

- 53. Organizational Effectiveness (OE).

Sector e: Person Related OutcomesExcellence

- 54. Quality Conscious Entrepreneurial Excellence (QCEE).
- 55. Excellence Recognition (EXR).
- 56. Output Excellence (OEX).

Job Satisfaction

- 57. Satisfaction with Company Policies (SCP).
- 58. Intrinsic Job Satisfaction (IJS).
- 59. Satisfaction with Job Security and Helping Others (SJSO).

Personal Effectiveness

60. Personal Effectiveness (PE).

Owing to constraints of time and resources, it was less than feasible to execute a thorough testing of the postulated schematic pattern of relationships among the constructs. However, within the limitations, an attempt was made to explore the relationships among the factors belonging to the various categories of the constructs. In addition to this, occasionally the relationships among factors within a given category of constructs would be examined also due to apparent salience of probable relationship. Due to the limitations of computational facilities available at the time of data analysis it was beyond the investigator to do a rigorous testing of the model (e.g., using path analysis etc.) with all the sixty variables comprising the model at one time. Toward the end of the main body of analyses and interpretations of the data, however, a "path analysis" would be attempted treating the five constructs as somewhat unidimensional ones, but that would be just indicative of the probable relationships among the five categories of variables.

In the beginning the five major sectors, namely (a) Person's Environmental Forces, (b) Organization Related Variables also referred to as Organizational Variables, (c) Person Related Variables, also referred to as Personal

Variables, (d) Organization Related Outcome also referred to as Organizational Outcome, and (e) Person Related Outcomes also referred to as Personal Outcomes were related to one another using the canonical correlation analysis in the main. The relationships explored basically followed the conceptual model depicted in Figure 1 (p. 12.5). Specifically the Sector a was related with Sector c, c with e, b with d, and d was related with e. Sectors b and c were postulated to be "unrelated" at the time of conceptualization of the model.

Some Research Questions: Relating the Categories of Variables

With regard to the relationships among the various sectors following specific research questions were raised.

Question 1

What are the relationships between dimensions of person's environmental forces and personal variables?

This meant relating Sector a with Sector c. Canonical correlation (CC) was calculated to answer this question. To interpret canonical correlation results an arbitrary criterion of ± 0.30 was used as an index of importance of a variable within a particular set of variables or canonical variate. Such a stand has been taken elsewhere also (Hair, Anderson, Tatham, & Grablovsky, 1979; Lambert & Durand, 1975). Canonical loadings rather than canonical weights were used in the analysis. Canonical loading statistic offers the

advantage over the weight statistic by being largely free from the direct influence of multicollinearity and supressor effects (Lambert & Durand, 1975). Apart from the canonical roots, a redundancy index (Rdx) was also calculated. The canonical roots provide estimates of the amount of shared variance between the independent and dependent variables and not the variance extracted from the set of variables . Often very little of the dependent variance is shared with the independent variables although the canonical root values are sometimes very high. The redundancy index overcomes this difficulty (Lambert & Durand, 1975).

Table 2 presents the results of CC in which, person's environmental forces' variables were related to the personal variables. Two canonical correlations out of possible eleven turned out to be significant.

The first CC results (Rc = 0.64, Rc² = 0.41, $X^2_{(297)} = 490.18$, p = 0.01) showed that person's environmental forces' variables were related significantly to the personal variables. The two sets mutually shared 41 per cent variance (it may please be noted that the derived values such as squares or square roots of a number may not exactly tally because they had been individually rounded off to two places after decimal from a four places after decimal number, for instance, 0.41 is not the exact square of 0.64 in this case). The redundancy index (0.1861) for the personal factors showed that

Table 2

Canonical Correlation Showing Relationship of Person's
Environmental Forces with Personal Variables

	Set 1	Set 2
Variables	Loadings	Loadings
Left hand set		
FO (PPE)	0.81	- 0.02
SEF (WE)	0.46	0.61
EPCI (PPE ' & PE)	0.74	- 0.20
IV (PPE)	0.74	- 0.08
EF (EWE)	0.60	- 0.26
ARO (EWE & CE)	0.33	- 0.05
FBA (EWE)	0.55	- 0.40
PSP (PE)	0.08	0.02
FDT (PE)	0.62	0.10
SC (EWE)	0.88	- 0.14
IV (PE)	1.00	0.08
Right hand set		
ILC	0.53	- 0.06
SE	0.47	- 0.16
IM	0.54	- 0.12
CA	0.95	0.02
CT	0.54	0.28

(table continues)

Table 2 (continued)

Variables	Set 1	Set 2
	Loadings	Loadings
FA	- 0.12	0.10
EM	0.40	0.06
JI	- 0.10	0.35
PTR	0.86	0.06
WIC	0.11	0.24
GC	0.05	0.02
SC	- 0.03	0.12
NSA	0.40	- 0.27
AAPS	0.61	- 0.03
II	0.41	0.03
OAPS	0.69	0.11
NCI	0.47	0.05
ASAPS	0.92	0.10
SAPS	0.59	0.12
ANAPS	0.78	0.08
DPS	0.75	- 0.07
QBR	0.02	0.04
CPA	0.68	- 0.02
OWAJ	0.15	0.35

(table continues)

Table 2 (continued)

Variables	Set 1	Set 2
	Loadings	Loadings
S	- 0.04	0.37
PI	0.72	- 0.16
PD	0.42	- 0.08
<u>Rc</u>	0.64	0.55
<u>Rc</u> ²	0.41	0.30
Chi-square	490.18	346.10
<u>df</u>	297	260
<u>p</u>	≤ 0.01	≤ 0.01
Variance <u>LHS</u>	0.2911	0.0284
Redundancy <u>LHS</u>	0.1202	0.0086
Variance <u>RHS</u>	0.4505	0.0622
Redundancy <u>RHS</u>	0.1861	0.0189

0.1861 of the total variance (0.4505) in the canonical variate composed of personal variables was shared with the variance in or "explained" by the canonical variate composed of the person's environmental forces variables. Redundancy values, in a way, may also be expressed in terms of percentage. Therefore the redundancy values are expressed up to four places after decimal for easy visualization in terms of percentage with two places after decimal. Thus the redundancy in this case may be thought in terms of 18.61 per cent of variance "explained" in the right hand set by the left hand variate. However, technically it is more precise to express redundancies as the proportion only, that is, as 0.1861 in this case. The first left hand variate could be thought to be loaded positively with Feedback and Opportunity (in Preprofessional Environment), Stimulation, Encouragement, and Feedback (in Work Environment), Esteem for pioneers, creators, and Innovators (in Preprofessional and Professional Environment); Innovation Values (in Preprofessional Environment); External Facilitation (in Extrawork Environment); Autonomy and Result orientation (in Extrawork and Childhood Environment); Freedom of Belief and Action (in Extrawork Environment); Freedom for Divergent Thought (in Professional Environment), Stimulation for Creativity (in Extrawork Environment), and Innovation Values (in Professional Environment). This left hand variate was

related to the right hand variate that was loaded positively with Internal Locus of control, self-esteem, Intrinsic Motivation, creative Abilities, Competence Thema, Environment Mastery, Personal Target Realization, Need for Self-actualization, Analytical Approach to Problem solving, Incubation and Illumination; Optimizing Approach to Problem solving, Nonconventional Ideation, Associative Approach to Problem solving, Synthesizing Approach to Problem solving, Analogical Approach to Problem solving, Determined, Persistent, and Self-starter; Courteous, Popular, and Altruistic; Passion for Innovation, and Passion for Dictinctiveness.

The second CC result showed ($R_c = 0.55$, $R_c^2 = 0.30$, $\chi^2_{(260)} = 346.10$, $p = .01$) that the second left hand variate was significantly related to the second right hand variate. Both the variates mutually shared 30 per cent variance. The redundancy index (0.0189) showed that 0.0189 of the total variance (0.0622) in the right hand variate was shared with the left hand set of variables. The left hand variate could be thought to be loaded positively with Stimulation, Encouragement, and Feedback (in Work Environment); and loaded negatively with Freedom of Belief and Action (in Extrawork Environment). This variate was related to the right hand variate that was loaded positively with Job Involvement; Obedient, Willing to Accept Judgements; and

Seniority.

Question 2

What are the interrelationships between personal variables and personal outcomes?

This meant relating Sector c with Sector e. Table 3 shows the results of canonical correlation in which personal variables were related to personal outcomes. Three CCs out of possible seven turned out to be significant.

The first CC showed that Sector c was related significantly to Sector e ($R_c = 0.77$, $R_c^2 = 0.59$, $X^2_{(189)} = 504.91$, $p = .01$). Both of the sectors mutually shared 59 per cent variance. Rdx (0.3005) for personal outcomes showed that 0.3005 out of the total variance (0.5123) was shared with the variance in or "explained" by the canonical variate composed of personal variables. The first left hand variate could be thought to be loaded positively with Internal Locus of Control, Self-esteem, Intrinsic Motivation, Creative Abilities, Competence Thema, Environment Mastery, Personal Target Realization, Generalized Competence, Need for Self-actualization, Analytical Approach to Problem solving; Incubation and Illumination; Optimizing Approach to Problem solving, Associative Approach to Problem solving, Synthesizing Approach to Problem solving, Analogical Approach to Problem solving; Determined, Persistent, and Self-starter; Courteous, Popular, and Altruistic; Obedient,

Table 3

Canonical Correlation Showing Relationship of Personal
Variables with Personal Outcomes

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
Left hand set			
ILC	0.91	0.07	- 0.13
SE	0.55	- 0.08	0.03
IM	0.73	- 0.02	0.02
CA	0.99	- 0.04	0.12
CT	0.79	0.20	0.05
FA	0.09	0.21	0.22
EM	0.47	0.18	0.30
JI	- 0.05	0.55	0.13
PTR	0.87	0.11	0.07
WIC	0.01	0.34	- 0.21
GC	0.63	- 0.00	- 0.07
SC	0.11	- 0.23	- 0.04
NSA	0.70	- 0.20	0.07
AAPS	0.48	- 0.08	0.01
II	0.36	0.03	0.13
OAPS	0.64	0.00	0.01
NCI	0.20	- 0.19	0.33

(table continues)

Table 3 (continued)

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
Left hand set			
ASAPS	0.80	- 0.03	- 0.16
SAPS	0.58	0.05	0.18
ANAPS	0.43	- 0.04	0.28
DPS	0.75	- 0.29	0.07
QBR	0.14	- 0.07	0.05
CPA	0.69	- 0.11	0.11
OWAJ	0.47	0.19	- 0.14
S	0.07	0.29	0.05
PI	0.68	- 0.15	- 0.02
PD	0.46	- 0.18	0.17
Right hand set			
PE	1.00	- 0.20	- 0.05
QCEE	0.85	- 0.16	0.35
EXR	0.88	0.34	- 0.05
OEX	0.93	0.15	- 0.14

(table continues)

Table 3 (continued)

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
SCP	0.21	0.61	- 0.21
IIS	0.23	0.64	0.24
SJSHO	0.18	0.14	- 0.19
<u>Rc</u>	0.77	0.54	0.42
<u>Rc</u> ²	0.59	0.29	0.18
Chi-square	504.91	264.18	171.42
<u>df</u>	189	156	125
<u>p</u>	≅ 0.01	≅ 0.01	≅ 0.01
Variance <u>LHS</u>	0.3376	0.0362	0.0219
Redundancy <u>LHS</u>	0.1980	0.0104	0.0039
Variance <u>RHS</u>	0.5122	0.1419	0.0439
Redundancy <u>RHS</u>	0.3005	0.0409	0.0078

Willing to Accept Judgements; Passion for Innovation, and Passion for Distinctiveness. This variate was related significantly to the right hand canonical variate that was loaded positively with Personal Effectiveness, Quality Conscious Entrepreneurial Excellence, Excellence Recognition, and Output Excellence.

The second CC results showed that some of the personal variables were significantly related to personal outcomes ($R_c = 0.54$, $R_c^2 = 0.29$, $X^2_{(156)} = 264.18$, $p = .01$), and shared 29 per cent variance. Rdx for personal outcomes (0.0409) showed that 0.0409 variance out of the total variance (0.1419) in personal outcomes was shared with the personal variables. The variate composed of personal variables could be thought to be loaded positively with Feedback and Accomplishment; and Work Inclination and Control. This canonical variate was related significantly to the right hand canonical variate that was loaded positively with Excellence Recognition, Satisfaction with Company Policies, and Intrinsic Job Satisfaction.

The third CC results showed significant relationship between the two sets of variables ($R_c = 0.42$, $R_c^2 = 0.18$, $X^2_{(125)} = 171.42$, $p = .01$). The two sets of variables mutually shared 18 per cent variance. Rdx for Sector e (0.0078) showed that 0.0078 variance out of the total variance (0.0439) in personal outcomes was shared with the personal

variables. The third left hand variate could be thought to be loaded positively with Environment Mastery, and Nonconventional Ideation. The third right hand variate was loaded positively with Quality Conscious Entrepreneurial Excellence.

Question 3

What are the interrelationships between organizational variables and organizational outcome?

This meant relating Sector b with Sector d. Since the Sector d consisted of only one variable a multiple regression analysis instead of canonical correlation analysis might have been appropriate. However, in order to maintain consistency with the general pattern of analysis in this section of research questions the canonical correlation analysis results would be mentioned at this place. Later on a multiple regression analysis would also be reported as a supplementary analysis in the section dealing with major research questions. The canonical correlation results (Table 4) showed that organizational variables were significantly related to the Organizational Effectiveness ($R_c = 0.66$, $R_c^2 = 0.43$, $X^2_{(14)} = 159.60$, $p \leq .01$). The two sets of variables mutually shared 43 per cent variance. The redundancy index (0.4321) for the Sector d showed that 0.4321 of the total variance (1.00) in the right hand variate

Table 4

Canonical Correlation Showing Relationship of Organizational
Factors with Organizational Outcome

Variables	Set 1
	Loadings
Left hand set	
TS	0.25
RCL	0.36
TC	0.04
CTC	- 0.19
NPLS	0.70
TY	0.42
WC	0.84
IWM	0.32
AO	0.50
TI	0.24
ETR	0.88
D	0.18
AS	0.20
SV	0.57

(table continues)

Table 4 (continued)

Variables	Set 1
	Loadings
Right hand set	
OE	1.00
<u>Rc</u>	0.66
<u>Rc</u> ²	0.43
Chi-square	159.60
<u>df</u>	14
p	= 0.01
Variance <u>LHS</u>	0.2287
Redundancy <u>LHS</u>	0.0989
Variance <u>RHS</u>	1.0000
Redundancy <u>RHS</u>	0.4322

was shared with the variance in the left hand variate or Sector b. The left hand variate could be thought to be loaded positively with Role Clarity, Nurturant Participative Leadership Style, Theory Y, Wholistic Concern, Informal Work Mechanism, Advancement Opportunity, Expertise Recognition, and Skills Variety. This canonical variate was related significantly with the right hand canonical variate that was loaded positively with Organizational Effectiveness.

Question 4

What are the interrelationships between organizational outcome and personal outcomes?

This meant relating Sector d with Sector e. The canonical correlation results (Table 5) showed that Sector d was significantly related to Sector e consisting of the personal outcomes ($R_c = 0.59$, $R_c^2 = 0.35$, $X^2_{(7)} = 121.04$, $p \leq .01$) and mutually shared 35 per cent variance. The redundancy index (0.0911) for personal outcomes showed that 0.0911 out of total variance (0.2635) in the right hand canonical variate or Sector e was shared with the variance in organizational outcome or Sector d. The left hand variate was loaded positively with Organizational Effectiveness. This canonical variate was related to the right hand variate that was loaded positively with Output Excellence, Satisfaction with Company Policies, Intrinsic Job Satisfaction; and Satisfaction with Job Security and Helping Others.

Table 5

Canonical Correlation Showing Interrelationship between
Organizational Outcome and Personal Outcomes

Variables	set 1
	Loadings
Left hand set	
OE	1.00
Right hand set	
PE	0.26
QCEE	0.20
EXR	0.22
OEX	0.30
SCP	0.95
IJS	0.63
SJSHO	0.54
<u>Rc</u>	0.59
<u>Rc</u> ²	0.35
Chi-square	121.04
<u>df</u>	7
p	≅ 0.01
Variance <u>LHS</u>	0.2635
Redundancy <u>LHS</u>	0.0911
Variance <u>RHS</u>	1.0000
Redundancy <u>RHS</u>	0.3456

The Major Research Questions: Relating the Variables

In the absence of adequate facility for a thorough testing of the model, e.g., (path analysis) the relationships among the factors were examined through statistical techniques including product-moment correlation, multiple regression analysis, canonical correlation, discriminant analysis, and analysis of variance depending upon the specific research questions that were to be answered. The research questions were formulated on the criteria of their novelty, salience for the organizational dynamics, and sometimes due to lack of adequate research on that variable in an organizational perspective, of course keeping in mind the postulated model.

Description of the various research questions apart from that pertaining to the factor analyses (already mentioned earlier), and their respective treatments follow.

Question 5

What are the interrelationships of the dimension(s) of antecedents of creativity, competence, and excellence with the dimension(s) of creativity, competence, and excellence?

The antecedent variables and creativity. Table 6 presents the results of canonical correlation analysis in which personal, organizational, and person's environmental

forces' variables were related to the dimensions of creativity. Three canonical correlations out of the possible eight turned out to be significant. The first canonical correlation results ($R_c = 0.79$, $R_c^2 = 0.63$, $X^2_{(288)} = 623.48$, $p \approx 0.01$) showed that the personal, organizational, and person's environmental forces' variables were significantly related to the dimensions of creativity. The two sets of variables mutually shared 63 per cent of the variance. The redundancy index (0.6154) for the factors of creativity showed that 0.6154 of the total variance (0.9815) in the canonical variate composed of dimensions of creativity was shared with the variance in or "explained" by the canonical variate composed of personal, organizational, and person's environmental forces' variables. The first left hand variate could be thought of as representing a situation that was marked by the personal variables comprising Internal Locus of Control, Intrinsic Motivation, Self-esteem, Need for Self-actualization; Determined, Persistent, and Self-starter; Courteous, Popular, and Altruistic; Obedient, Willing to Accept Judgements; Passion for Innovation, Passion for Distinctiveness, organizational variables such as Task Structure, Role Clarity, Nurturant Participative Leadership Style, Theory Y, Wholistic Concern, Informal Work Mechanism, Advancement Opportunity, Task Identity, Expertise Recognition, Skills Variety, and person's environmental forces comprising

Table 6

Canonical Correlation Showing Relationships of Personal,
Organizational, and Person's Environmental Forces' Variables
with the Dimensions of Creativity

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
Left hand set			
ILC	0.89	0.01	- 0.14
SE	0.77	- 0.35	0.10
IM	0.68	- 0.34	- 0.25
NSA	0.66	- 0.43	- 0.10
DPS	1.00	- 0.20	0.06
QBR	0.24	0.36	0.03
CPA	0.87	- 0.30	- 0.13
OWAJ	0.44	0.14	- 0.20
S	0.16	0.12	0.13
PI	0.95	- 0.04	- 0.28
PD	0.79	0.24	- 0.18
TS	0.86	- 0.01	- 0.04
RCL	0.80	0.00	- 0.05
TC	0.29	0.20	- 0.01
CTC	0.24	0.27	- 0.04
NPLS	0.36	0.22	0.07

(table continues)

Table 6 (continued)

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
TY	0.58	0.02	- 0.08
WC	0.56	0.20	0.09
IWM	0.62	0.10	0.25
AO	0.46	0.07	- 0.01
TI	0.83	- 0.24	- 0.12
ETR	0.37	0.10	0.01
D	- 0.30	- 0.00	- 0.11
AS	- 0.56	- 0.08	0.06
SV	0.60	0.30	0.05
FO (PPE)	0.66	- 0.15	0.15
SEF (WE)	0.52	0.02	0.00
EPCI (PPE & PE)	0.60	- 0.14	- 0.15
IV (PPE)	0.68	0.09	0.06
EF (EWE)	0.50	0.02	0.17
ARO (EWE & CE)	0.20	- 0.07	0.01
FBA (EWE)	0.45	- 0.20	0.08
PSP (PE)	0.13	0.23	0.12
FDT (PE)	0.61	- 0.05	0.06
SC (EWE)	0.68	- 0.23	0.13
IV (PE)	0.98	0.13	- 0.03

(table continues)

Table 6 (continued)

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
Right hand set			
CA	1.00	- 0.29	- 0.07
AAPS	0.70	- 0.03	- 0.23
II	0.65	0.35	0.00
OAPS	1.00	0.09	- 0.46
NCI	0.82	0.42	0.25
ASAPS	1.00	- 0.24	0.22
SAPS	0.91	0.40	- 0.08
ANAPS	1.00	0.35	0.06
<u>Rc</u>	0.79	0.59	0.47
<u>Rc</u> ²	0.63	0.35	0.22
Chi-square	628.48	364.71	249.77
<u>df</u>	288	245	204
<u>p</u>	= 0.01	= 0.01	= 0.05
Variance <u>LHS</u>	0.3996	0.0387	0.0147
Redundancy <u>LHS</u>	0.2505	0.0135	0.0033
Variance <u>RHS</u>	0.9815	0.0911	0.0489
Redundancy <u>RHS</u>	0.6154	0.0318	0.0109

Feedback and Opportunity (in Preprofessional Environment); Stimulation, Encouragement, and Feedback (in Work Environment); Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment); Innovation Values (in Preprofessional Environment); External Facilitation (in Extrawork Environment); Freedom of Belief and Action (in Extrawork Environment); Freedom for Divergent Thought (in Professional Environment); Stimulation for Creativity (in Extrawork Environment); Innovation Values (in Professional Environment). However, the canonical loadings of the factors called Decentralization and Autonomy in Supervision being negative, the situation described above could be thought of as lacking on these two counts. This variate was related significantly to the right hand variate loaded positively with the factors comprising Creative Abilities, Analytical Approach to Problem solving; Incubation and Illumination; Optimizing Approach to Problem solving, Nonconventional Ideation, Associative Approach to Problem solving, Synthesizing Approach to Problem solving, and Analogical Approach to Problem solving.

The second canonical correlation results ($R_c = 0.59$, $R_c^2 = 0.35$, $\chi^2_{(245)} = 364.71$, $p \leq .01$) showed that personal, organizational, and person's environmental forces' variables were significantly related to the factors of creativity and shared a variance of 35 per cent. The redundancy index

(0.0318) for the dimensions of creativity showed that 0.0318 of the total variance (0.9108) in canonical variate composed of dimensions of creativity was shared with or "explained" by the left canonical variate. The second left hand variate could be thought of as being loaded negatively with personal variables such as Self-esteem, Intrinsic Motivation, Need for Self-actualization; and Courteous, Popular, and Altruistic; but was loaded positively with Quiet, Bashful and Reserved; (personal variable) and Skills Variety (organizational variable.). This left hand variate was significantly related to the right hand variate that was loaded positively with Incubation and Illumination; Nonconventional Ideation, Synthesizing Approach to Problem solving, and Analogical Approach to Problem solving.

The third CC though significant, did not have loadings equal to or greater than 0.30 in the left hand variate. Therefore in consonance with the stands taken in the present study this CC would not be described here, but would be reported in the table.

The two significant canonical correlations (CC) obtained and described above signify an important finding. The first CC points to the factors that could be taken into account The Creativity Process as a whole is of interest. The second CC tells us about a more specific relationship with a segment of creativity process. That is, the left hand variate of the

second CC consisted of the factors which should be taken into account if the Creative Thinking Process is mainly in the focus of attention.

The antecedent variables and competence. Table 7 presents the results of canonical correlation analysis in which dimensions of competence were related to the dimensions of personal, organizational, and person's environmental forces' variables. Three canonical correlations out of possible eight turned out to be significant. The first CC results ($R_c = 0.69$, $R_c^2 = 0.48$, $X^2_{(288)} = 525.84$, $p = .01$), showed that dimensions of competence were significantly related to personal, organizational, and person's environmental forces' variables. The two sets mutually shared 43 per cent of the variance. The redundancy index (0.1749) for the dimensions of competence showed that 0.1749 of the total variance (0.3652) in the canonical variate composed of dimensions of competence was shared with or "explained" by the left hand canonical variate. The left hand variate reflected a situation that was marked by the presence of personal variables such as Internal Locus of Control, Self-esteem, Intrinsic Motivation, Need for Self-actualization; Determined, Persistent, and Self-starter; Courteous, Popular, and Altruistic; Obedient, Willing to Accept Judgements; Passion for Innovation, Passion for Distinctiveness, organizational variables such as Task Structure, Role Clarity,

Table 7

Canonical Correlation Showing Relationships of Personal
Organizational, and Person's Environmental Forces' Variables
with the Dimensions of Competence

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
Left hand set			
ILC	0.89	0.08	0.13
SE	0.61	- 0.06	0.14
IM	0.66	- 0.03	0.20
NSA	0.62	- 0.06	0.24
DPS	0.74	- 0.09	0.05
QBR	0.18	- 0.40	- 0.09
CPA	0.72	0.01	- 0.03
OWAJ	0.39	- 0.26	0.33
S	0.23	-0.18	- 0.27
PI	0.75	- 0.02	0.23
PD	0.45	- 0.36	0.15
TS	0.71	0.16	0.05
RCL	0.68	0.06	0.18
TC	0.22	- 0.52	- 0.11
CTC	0.09	- 0.29	0.01
NPLS	0.37	0.13	- 0.29

(table continues)

Table 7 (continued)

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
TY	0.45	0.04	0.04
WC	0.46	0.09	0.16
IWM	0.42	0.05	0.04
AO	0.51	0.33	0.11
TI	0.64	0.25	0.18
ETR	0.32	0.28	0.01
D	- 0.15	0.55	0.13
AS	- 0.40	0.41	0.17
SV	0.48	- 0.11	0.01
FO (PPE)	0.46	0.12	0.29
SEF (WE)	0.48	0.31	0.06
EPCI (PPE & PE)	0.42	0.14	0.07
IV (PPE)	0.43	0.06	0.10
EF (EWE)	0.36	- 0.03	0.18
ARO (EWE & CE)	0.20	0.21	0.06
FBA (EWE)	0.24	0.02	0.01
PSP (PE)	0.06	- 0.23	0.11
FDT (PE)	0.50	0.19	0.09
SC (EWE)	0.49	0.16	0.15
IV (PE)	0.68	0.00	0.00

(table continues)

Table 7 (continued)

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
Right hand set			
CT	1.00	- 0.17	0.09
FA	- 0.16	0.63	0.23
EM	0.69	- 0.18	- 0.44
JI	- 0.07	0.66	- 0.16
PTR	1.00	0.23	0.07
WIC	- 0.09	0.73	- 0.10
GC	0.30	0.22	0.55
SC	0.13	0.01	0.19
<u>Rc</u>	0.69	0.56	0.50
<u>Rc</u> ²	0.48	0.31	0.25
Chi-square	525.84	352.56	252.68
<u>df</u>	288	245	204
<u>p</u>	= 0.01	= 0.01	= 0.05
Variance <u>LHS</u>	0.2496	0.0512	0.0229
Redundancy <u>LHS</u>	0.1195	0.0159	0.0056
Variance <u>RHS</u>	0.3652	0.1916	0.0784
Redundancy <u>RHS</u>	0.1749	0.0597	0.0192

Nurturant Participative Leadership Style, Theory Y, Wholistic Concern, Informal Work Mechanism, Advancement Opportunity, Task Identity, Expertise Recognition, Skills Variety, and person's environmental forces' variables such as Feedback and Opportunity (in Preprofessional Environment); Stimulation, Encouragement, and Feedback (in Work Environment); Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment); Innovation Values (in Preprofessional Environment), External Facilitation (in Extrawork Environment), Stimulation for Creativity (in Extrawork Environment), Innovation Values in (Professional Environment). This left hand variate was significantly related to the right hand variate that could be thought of as being loaded positively with Competence Thema, Environment Mastery, Personal Target Realization, and Generalized Competence.

The second Canonical correlation results ($R_c = 0.56$, $R_c^2 = 0.36$, $\chi^2_{(245)} = 352.56$, $p \leq .01$) showed that personal, organizational, and person's environmental forces' variables were significantly related to dimensions of competence and shared a variance of 31 per cent. The redundancy index (0.0597) for the factors comprising competence showed that 0.0597 of the total variance (0.1916) in the right hand canonical variate was explained by the left hand variate. The left hand variate represented a situation that lacked

in terms of the personal variables such as Quiet, Bashful and Reserved; Passion for Distinctiveness, Constraint of Time (organizational variables), but was marked by the presence of organizational variables such as Advancement Opportunity, Informal Work Mechanism, Decentralization, Autonomy in Supervision, and person's environmental forces i.e., Stimulation, Encouragement, and Feedback (in Work Environment). The second right hand variate could be thought to be loaded positively with Feedback and Accomplishment, Job Involvement; and Work Inclination and Control.

Results of the third CC ($R_c = 0.50$, $R_c^2 = 0.25$, $\chi^2_{(204)} = 252.68$, $p = .05$) showed that the left hand variate was related significantly to the right hand variate and mutually shared a variance of 25 per cent. The redundancy index (0.0192) for the right set of variables showed that 0.0192 of the total variance (0.0784) in the right hand canonical was shared with or "explained" by the left hand variate. The left hand variate characterized a situation that was marked positively by personal variable Obedient, Willing to Accept Judgements. The right hand variate was loaded positively with Generalized Competence and loaded negatively with Environment Mastery.

As described above the dimensions of competence could be thought of as related to two basic spheres of competence. First, the one in which the person himself is in the focus, and the second in which the job is in the focus.

The CC results showed that three kinds of significant relationships existed in the data revealing the relationship of the other variables with the indexes of the aspects of competence. The first right hand variate consisted of the dimensions of competence that largely had a personal reference (i.e., Competence Thema, Environment Mastery, Personal Target Realization, and Generalized Competence). The second right hand variate comprised factors like Feedback and Accomplishment; Job Involvement; and Work Inclination and Control. These factors could be thought of as, by and large, having a work reference. The right hand variate consisted of the index of Generalized Competence (and Environment Mastery, but with a negative loading) which could be thought of as an index with a personal reference but at the same time with specific and direct reference to the job aspects of the respondents. Thus all the three CCs taken together point out to the fact that there would be different "antecedents" that should be looked into in order to maximized the three mutually different referents of competence.

The antecedent variables and excellence. Table 8 presents the results of canonical correlation analysis in which personal, organizational, and person's environmental forces' variables were related to the factors of excellence. Two canonical correlations out of possible three turned out to be significant.

Table 8

Canonical Correlation Showing Relationships of Personal,
Organizational, and Person's Environmental Forces' Variables
with the Dimensions of Excellence

	Set 1	Set 2
Variables	Loadings	Loadings
Left hand set		
ILC	0.91	0.11
SE	0.52	- 0.03
IM	0.73	- 0.03
NSA	0.69	- 0.10
DPS	0.60	- 0.21
QBR	0.21	0.01
CPA	0.73	0.04
OWAJ	0.51	0.26
S	0.16	0.02
PI	0.73	- 0.10
PD	0.47	- 0.18.
TS	0.67	- 0.13
RCL	0.74	- 0.00
TC	0.05	0.05
CTC	0.06	0.05
NPLS	0.28	- 0.19

(table continues)

Table 8 (continued)

Variables	Set 1	Set 2
	Loadings	Loadings
TY	0.56	- 0.08
WC	0.48	- 0.07
IWM	0.41	- 0.32
AO	0.54	0.08
TI	0.76	- 0.14
ETR	0.37	- 0.02
D	- 0.10	0.27
AS	- 0.29	0.13
SV	0.50	- 0.08
FO (PPE)	0.36	- 0.09
SEF (WE)	0.39	0.09
EPCI (PPE & PE)	0.36	- 0.16
IV (PPE)	0.34	- 0.27
EF (EWE)	0.32	- 0.24
ARO (EWE & CE)	0.16	- 0.30
FBA (EWE)	0.26	- 0.22
PSP (PE)	0.14	- 0.01
FDT (PE)	0.42	- 0.16
SC (EWE)	0.49	- 0.34
IV (PE)	0.51	- 0.24

(table continues)

Table 8 (continued)

	Set 1	Set 2
Variables	Loadings	Loadings
Right hand set		
QCEE	0.89	- 0.61
EXR	0.93	0.41
OEX	1.00	0.08
<u>Rc</u>	0.66	0.45
<u>Rc</u> ²	0.43	0.21
Chi-square	249.35	95.61
<u>df</u>	108	70
<u>p</u>	≅ 0.01	≅ 0.05
Variance <u>LHS</u>	0.2396	0.0273
Redundancy <u>LHS</u>	0.1040	0.0056
Variance <u>RHS</u>	0.8854	0.1827
Redundancy <u>RHS</u>	0.3844	0.0377

The first CC results ($R_c = 0.66$, $R_c^2 = 0.43$, $X^2_{(108)} = 249.35$, $p = .01$) showed that personal, organizational, and person's environmental forces' variables were significantly related to the factors of excellence. The two sets of variables mutually shared a variance of 43 per cent. The redundancy index (0.3844) for the factors of excellence showed that 0.3844 variance of the total variance (0.8855) in the factors of excellence was shared with or "explained" by the left hand set of variables. The first left hand variate could be thought to be loaded positively with personal variables such as Internal Locus of Control, Self-esteem, Intrinsic Motivation, Need for Self-actualization; Determined, Persistent, and Self-starter; Courteous, Popular and Altruistic; Obedient, Willing to Accept Judgements; Passion for Innovation, Passion for Distinctiveness, organizational variables comprising Task Structure, Role Clarity, Theory Y, Wholistic Concern, Informal Work Mechanism, Advancement Opportunity, Task Identity, Expertise Recognition, Skills Variety, and person's environmental forces' variables such as Feedback and Opportunity (in Preprofessional Environment); Stimulation, Encouragement, and Feedback (in Work Environment); Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment); Innovation Values (in Preprofessional Environment), External Facilitation (in Extrawork Environment), Freedom for Divergent

Thought (in Professional Environment), Stimulation for Creativity (in Extrawork Environment), Innovation Values (in Professional Environment). This canonical variate was significantly related to a variate composed of factors of excellence that was loaded positively with Quality Conscious Entrepreneurial Excellence, Excellence Recognition, and Output Excellence.

The second canonical correlation results ($R_c = 0.45$, $R_c^2 = 0.21$, $X^2_{(70)} = 95.61$, $p = 0.05$) showed that the two sets of variables were significantly related and shared 21 per cent of the variance. The redundancy index (0.0377) for the factors of excellence showed that 0.0377 of the total variance (0.1827) in the right hand variate was shared with or "explained" by the left hand variate. The left hand variate could be thought of as being loaded negatively with organizational variable Informal Work Mechanism, person's environmental forces' variables Autonomy and Result Orientation (in Extrawork and Childhood Environment); and Stimulation for Creativity (in Extrawork Environment). This variate was related significantly to the right hand variate composed of factors of excellence which could be thought of as representing a situation where the role incumbents lacked Quality Conscious Entrepreneurial Excellence. However, Excellence Recognition was present there.

These two CCs taken together revealed that "Excellence" phenomena could be viewed as having three components i.e., Quality conscious Entrepreneurial Excellence, Excellence Recognition, and Output Excellence. The second CC represented situation that was marked by the presence of Excellence Recognition (but loaded negatively with Quality Conscious Entrepreneurial Excellence).

Question 6

What are the important dimension(s) of personal, organizational, and person's environmental forces' variables which discriminate between high and low magnitudes of the dimensions of creativity, competence, and excellence.

Antecedents discriminating between levels of creativity.

As mentioned earlier the process of creativity had been postulated to have two components, creative thinking process and creative abilities. The factor analysis of creative thinking process questionnaire had yielded seven factors, namely (a) Analytical Approach to Problem solving; (b) Incubation and Illumination; (c) Optimizing Approach to Problem solving; (d) Nonconventional Ideation; (e) Associative Approach to Problem solving; (f) Synthesizing Approach to Problem solving; (g) Analogical Approach to Problem solving.

In order to identify some of the important personal, organizational, and person's environmental forces' variables that could gainfully be used to discriminate between the

groups of people relatively low and high on these seven factors, correspondingly seven discriminant analyses were performed using the Rao's stepwise method. Those analyses would be described one by one.

Rao's method was used because this method maximizes Rao's \underline{V} (Rao, 1970, p. 257), a generalized distance measure. The method would select a variable that contributes the largest increase in \underline{V} when added to the previous variables, which in turn would amount to the greatest overall separation of the groups. A variable containing a large amount of information already included in some previously selected variable might actually cause a decrease in the value of \underline{V} implying a decline in discriminating power since the groups would be brought more closely together; and normally one would not like to include such a variable. Additionally, the change in \underline{V} has a chi-square distribution with one degree of freedom when one has relatively "large" number of cases that makes for relatively convenient testing of statistical significance. Being a stepwise procedure this method provides an efficient way of approximately locating a best set of discriminating variable.

Discriminant analysis for the first factor of creative thinking process, namely Analytical Approach to Problem solving showed (Table 9) that some of the personal, organizational, and person's environmental forces' variables

could discriminate between the groups of respondents relatively low or high (median = 6.71) on Analytical Approach to Problem solving ($X^2_{(18)} = 79.25, p \leq .01$). In the tabular presentation and description, the significant variables have been rearranged in decreasing order of magnitude of the respective standardized discriminant function coefficient without regard to arithmetic sign for ease of presentation. Which means that the variables were not picked up stepwise by the computer program in the order presented in the table. The significant variables were Passion for Distinctiveness, Wholistic Concern, Passion for Innovation, Penalty for Shabby Performance (in Professional Environment), Stimulation for Creativity (in Extrawork Environment), Freedom for Divergent Thought (in Professional Environment), Skills Variety, Theory Y; Stimulation, Encouragement, and Feedback (in Work Environment); Decentralization, Informal Work Mechanism, Constraint of Change, Innovation Values (in Professional Environment), Task Structure, Expertise Recognition; Determined, Persistent, and Self-starter; Internal Locus of Control; and Quiet, Bashful, and Reserved; in order of classificatory strength as evidenced by their respective standardized discriminant function (SDF) coefficients. This SDF could be thought to be loaded positively with Theory Y, Penalty for Shabby Performance (in Professional Environment), Freedom for

Discriminant Analysis Results for Personal, Organizational, and Person's Environmental Forces as the Discriminating, and Analytical Approach to Problem Solving as the

Criterion Variable

Variables	PD	WC	PI	PSP(PE)	SC(EWE)	FDT(PE)	SV	TY	SEE (WE)
<u>SDF</u>									
Coefficients	- 0.41	0.38	- 0.36	0.34	- 0.32	- 0.29	0.24	- 0.23	- 0.23
Variables	D	IWM	CFC	IV(PE)	TS	ETR	DPS	ILC	QBR
<u>SDF</u>									
Coefficients	- 0.22	- 0.18	- 0.18	0.17	0.17	- 0.16	- 0.14	- 0.13	- 0.13
<u>nc</u>	<u>χ²</u>	<u>p</u>	<u>Centroid of. groups</u>		<u>Prediction</u>		<u>results</u>		
			Group 1	Group 2	Group 1	Group 2	Total		
0.50	79.25	18	0.00	0.34	- 0.73	75.9%	71.7%	74.48%	

Divergent Thought (in Professional Environment), Skills Variety and Task Structure; and loaded negatively with all other variables. Considering the nature and the respective arithmetic signs of the discriminating variables entered in the SDF, this function seemed to represent a relatively "undesirable" state of affairs in terms of greater number of variables. Since the criterion variable was something "desirable", namely Analytical Approach to Problem solving, one would expect this function to be present in less magnitude in the "high" criterion group (that is, the group of respondents yielding scores above the median on Analytical Approach to Problem solving) and correspondingly in higher magnitude in "low" criterion group (that is, the group of respondents yielding scores below the median point on Analytical Approach to Problem solving). The relative magnitudes of the centroids of groups in reduced space revealed that this in fact was so (centroid of group 1 = 0.34, group 2 = - 0.73). The prediction results using this classification function showed that 74.48 per cent of "grouped" cases could be correctly classified.

Results (Table 10) of the discriminant analysis for the second factor of creative thinking process, namely Incubation and Illumination, showed that some of the variables could significantly discriminate between groups of respondents respectively low and high (median = 5.67) on Incubation and

Illumination ($\chi^2_{(11)} = 50.82, p \leq .01$). The significant variables were Wholistic Concern, Innovation Values (in Preprofessional Environment), Passion for Innovation, Need for Self-actualization, Decentralization, Penalty for Shabby Performance (in Professional Environment); Stimulation, Encouragement, and Feedback (in Work Environment); Passion for Distinctiveness; Courteous, Popular, and Altruistic; Task Structure; and Quiet, Bashful, and Reserved; in that order of classificatory strength as evidenced by their respective SDF coefficients. The discriminant function could be thought to be loaded positively with Need for Self-actualization; Stimulation, Encouragement, and Feedback (in Work Environment); and loaded negatively with all other variables. Considering the fact that the criterion variable was something desirable, namely Incubation and Illumination, one would expect this function to be present in less magnitude in the high criterion group and correspondingly in high magnitude in low criterion group. The relative magnitudes of the centroids of groups in reduced space revealed that this in fact was so (centroid of group 1 = 0.24, group 2 = - 0.68). The prediction results using this classification function showed that 69.31 per cent of "grouped" cases could be correctly classified.

Table 10

Discriminant Analysis Results for Personal, Organizational, and Person's Environmental Forces as the Discriminating, and Incubation and Illumination as the Criterion Variable

Variables	IWM	IV(PPE)	PI	NSA	D	PSP(PE)
<u>SDF</u>						
Coefficients	- 0.44	- 0.33	- 0.33	0.33	- 0.29	- 0.29
Variables	SEF(WE)	PD	CPA	TS	QBR	
<u>SDF</u>						
Coefficients	0.28	- 0.24	- 0.20	- 0.20	- 0.18	
<u>Rc</u>	χ^2	df	p	<u>Centroid of groups</u>		
				Group 1	Group 2	Total
0.41	50.82	11	0.00	0.24	- 0.68	75.0%
						69.31%

Results (Table 11) of the discriminant analysis for the third factor of creative thinking process, namely Optimizing Approach to Problem solving, showed that some of the personal, organizational, and person's environmental forces' variables could significantly discriminate between groups of respondents relatively high or low (median = 13.94) on this factor ($\chi^2_{(13)} = 75.93, p = .01$). The significant variables were Constraint of Change; Freedom of Belief and Action (in Extrawork Environment); Autonomy in Supervision, Task Identity; Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment); Passion for Innovation, Passion for Distinctiveness, Penalty for Shabby Performance (in Professional Environment), Decentralization; Courteous, Popular, and Altruistic; Innovation Values (in Professional Environment), Internal Locus of Control, and External Facilitation (in Extrawork Environment) in that order of classificatory strength as evidenced by their respective SDF coefficients. The discriminant function could be thought to be loaded positively with constraint of change, Task Identity; Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment); Passion for Innovation, Passion for Distinctiveness, Decentralization; Courteous, Popular, and Altruistic; Innovation Values (in Professional Environment), Internal Locus of Control, and External

Discriminant Analysis Results for Personal, Organizational, and person's Environmental Forces the Discriminating, and Optimizing Approach to Problem Solving as the Criterion

Variables	CTC	FBA (EWE)	AS	TI	EPCI (PPE & PE)	PI	PD
<u>SDF</u>							
Coefficients	0.35	- 0.29	- 0.28	0.26	0.24	0.23	0.20
Variables	PSP(PE)	D	CPA	IV(PE)	ILC	EF(EWE)	
<u>SDF</u>							
Coefficients	- 0.19	0.16	0.16	0.15	0.14	0.13	
<u>Rc</u>							
χ^2	df	p	<u>Centroid of groups</u>		<u>Prediction results</u>		
			Group 1	Group 2	Group 1	Group 2	Total
0.49	75.93	13	0.00	0.57	70.4%	71.9%	71.03%

Facilitation (in Extrawork Environment), and loaded negatively with all other variables. Considering the fact that the criterion variable was something desirable, namely Optimizing Approach to Problem solving, and considering the nature and the respective arithmetic signs of the discriminating variables one would expect this function to be present in less magnitude in "low" criterion group and correspondingly in higher magnitude in "high" criterion group. The relative magnitudes for the centroids of groups in reduced space revealed that this in fact was so (centroid of group 1 = - 0.41, group 2 = 0.57). The prediction results using this classification function showed that 71.03 per cent of "grouped" cases could be correctly classified.

The results showed (Table 12) that some of the personal, organizational, and person's environmental forces' variables could significantly discriminate between groups of respondents respectively low and high (median = 5.75) on the fourth factor of creative thinking process, namely Nonconventional Ideation ($\chi^2_{(16)} = 63.42, p \leq .01$). The significant variables were Advancement Opportunity; Stimulation, Encouragement, and Feedback (in Work Environment); Self-esteem, Intrinsic Motivation, Passion for Distinctiveness, Constraint of Change; Quiet, Bashful, and Reserved; Determined, Persistent, and Self-starter; Innovation values (in Professional Environment); Autonomy in Supervision, Need for

Table 12

Discriminant Analysis Results for Personal, Organizational, and Person's Environmental Forces as the Discriminating, and Nonconventional Ideation as the Criterion Variable

Variables	AO	SEF(WE)	SE	IM	PD	CTC	OBR	DPS
<u>SDF</u>								
Coefficients	- 0.47	0.35	- 0.32	0.30	- 0.27	- 0.27	- 0.26	- 0.26
Variables	IV(PE)	AS	NSA	CPA	PSP(PE)	TI	ILC	OWAJ
<u>SDF</u>								
Coefficients	- 0.25	0.25	0.24	- 0.23	- 0.22	- 0.21	0.19	0.16
<u>RC</u>								
χ^2	df	p	<u>Centroid of group</u>		<u>Prediction results</u>			
			Group 1	Group 2	Group 1	Group 2	Total	
0.45	63.42	16	0.00	- 0.68	68.8%	69.3%	68.97%	

Self-actualization; Courteous, Popular, and Altruistic; Penalty for Shabby Performance (in Professional Environment); Task Identity, Internal Locus of Control; and Obedient, Willing to Accept Judgements; in that order of classificatory strength as evidenced by their respective SDF coefficients. This discriminant function could be thought of as loaded positively with stimulation, Encouragement, and Feedback (in Work Environment), Intrinsic Motivation, Autonomy in Supervision, Need for Self-actualization, Internal Locus of Control; and Obedient, Willing to Accept Judgements; and loaded negatively with all other variables. This function was present in less magnitude in "high" criterion group and correspondingly in high magnitude in "Low" criterion group (centroid of group 1 = 0.30, group 2 = - 0.68). The prediction results using this classification function showed that 68.97% of "grouped" cases could be correctly classified.

The discriminant analysis results (Table 13) for the fifth factor of creative thinking process, namely Associative Approach to Problem solving ($\chi^2_{(12)} = 79.86, p \leq .01$) showed that some of the personal, organizational, and person's environmental forces' variables could significantly discriminate between people relatively low or high (median = 10.43) on this factor. The significant factors were Feedback and Opportunity (in Preprofessional Environment); Determined, Persistent, and Self-starter; Freedom for

Discriminant Analysis Results for Personal, Organizational, and Person's Environmental Forces as the Discriminating, and Associative Approach to Problem Solving as the Criterion

Variable	FO (PPE)	DPS	FDT (PE)	CTC	IWM	OWAJ	FBA (EWE)
<u>SDF</u>							
Coefficients	0.34	0.31	0.29	0.27	- 0.27	0.26	- 0.26
Variables	IM	ETR	NSA	ARO (EWE & CE)			
<u>SDF</u>							
Coefficients	0.22	0.19	0.19	- 0.15			
<u>Rc</u>	<u>χ^2</u>	<u>p</u>	<u>Centroid of groups</u>		<u>Prediction results</u>		
	<u>df</u>		Group 1	Group 2	Group 1	Group 2	Total
0.50	79.86	12	0.00	- 0.49	0.51	68.7%	75.7%
							72.02%

Divergent Thought (in Professional Environment); Constraint of Change, Informal Work Mechanism; Obedient, Willing to Accept Judgements; Courteous, Popular, and Altruistic; Freedom of Belief and Action (in Extrawork Environment); Self-esteem, Expertise Recognition, Need for Self-actualization; and Autonomy and Result Orientation (In Extrawork and Childhood Environment); in that order of classificatory strength as evidenced by their respective standardized discriminant function coefficients. The discriminant function could be thought of as loaded positively with Feedback and Opportunity (in Preprofessional Environment); Determined, Persistent, and Self-starter; Freedom for Divergent Thought (in Professional Environment); Constraint of Change, Informal Work Mechanism; Courteous, Popular, and Attruistic; Self-esteem, Expertise Recognition, and Need for Self-actualization; and loaded negatively with all other variables. Considering the nature and the respective arithmetic signs of the discriminating variables entered in the SDF, this function seemed to represent relatively desirable state of affairs in terms of greater number of variables. Considering the fact that the criterion variable was something desirable, namely Associative Approach to Problem solving, one would expect this function to be present in higher magnitude in "high" criterion group and correspondingly in lower magnitude in "low" criterion group. As evidenced by the

centroids of the groups in reduced space (centroid of group 1 = - 0.49, group 2 = 0.51) this expectation came true. The prediction results using this classification function showed that 72.07 per cent of "grouped" cases could be correctly classified.

Results of the Discriminant analysis for the sixth factor of the creative thinking process, namely Synthesizing Approach to Problem solving (Table 14) showed that some of the variables could significantly discriminate between groups of respondents respectively low and high (median = 6.59) on this factor ($\chi^2_{(13)} = 94.16, p \leq .01$). The significant variables were Internal Locus of Control; Freedom for Divergent Thought (in Professional Environment), Constraint of Change, Innovation Values (in Preprofessional Environment); Penalty for Shabby Performance (in Professional Environment); Passion for Distinctiveness, Self-esteem, Passion for Innovation; Quiet, Bashful, and Reserved; Task Structure; Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment); Autonomy and Result Orientation (in Extrawork and Childhood Environment); and Theory Y, in that order of classificatory strength as evidenced by their respective SDF coefficients. The SDF could be thought to be loaded positively with Self-esteem; and Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment),

Discriminant Analysis Results for Personal, Organizational, and Person's Environmental

Forces as the Discriminating, and Synthesizing Approach to Problem Solving as the

Criterion Variable

Variables	ILC	FDT(PE)	CTC	IV(PPE)	PSP(PE)	PD	IM
<u>SDF</u>							
Coefficients	- 0.47	- 0.33	- 0.21	- 0.20	- 0.20	- 0.21	0.19
Variables	PI	QBR	TS	EPCI(PPE & PE)	ARO(EWE & CE)	TY	
<u>SDF</u>							
Coefficients	- 0.19	- 0.17	- 0.15	0.14	- 0.13	- 0.12	
<u>Rc</u>	<u>X²</u>	<u>df</u>	<u>I</u>	<u>Centroid of groups</u>		<u>Prediction results</u>	
				Group 1	Group 2	Group 1	Group 2
0.53	94.16	13	0.00	0.54	- 0.52	72.5%	73.6%
							73.10%

and loaded negatively with all other variables. Considering the nature and the respective arithmetic signs of the discriminating variables entered in the SDF, this function seemed to represent relatively "undesirable", state of affairs in terms of greater number of variables. Considering the fact that the criterion variable was something desirable, namely Synthesizing Approach to Problem solving, one would expect this function to be present in less magnitude in "high" criterion group and correspondingly in high magnitude in "low" criterion group. The relative magnitudes of the centroids of groups in reduced space revealed that this in fact was so (centroid of group 1 = 0.54, group 2 = - 0.52). The prediction results using this classification function showed that 73.10 per cent of "grouped" cases could be correctly classified.

Results of the discriminant analysis for the seventh factor of creative thinking process, namely Analogical Approach to Problem solving (Table 15) showed that some of the personal, organizational, and person's environmental forces' variables could significantly discriminate between groups of respondents relatively low and high (median = 5.79) on this factor ($\chi^2_{(13)} = 87.55, p \leq .01$). The significant variables were Need for Self-actualization, Wholistic Concern; Determined, Persistent, and Self-starter; Passion for Distinctiveness, Intrinsic Motivation, Theory Y,

Discriminant Analysis Results for Personal, Organizational, and Person's Environmental Forces as the Discriminating, and Analogical Approach to Problem Solving as the

Criterion Variable

Variables	NSA	WC	DPS	PD	IM	TY	AS
<u>SDF</u>							
Coefficients	0.40	- 0.32	- 0.30	- 0.30	- 0.28	- 0.24	0.22
Variables	EF (EWE)	IV (PE)	RCL	EPCI (PPE & PE)	PI	ILC	
<u>SDF</u>							
Coefficients	- 0.22	- 0.20	0.19	0.18	- 0.18	- 0.13	
<u>Rc</u>	<u>X²</u>	<u>df</u>	<u>Centroid of groups</u>		<u>Prediction results</u>		
			Group 1	Group 2	Group 1	Group 2	Total
0.52	87.55	13	0.00	- 0.75	78.2%	79.6%	78.62%

Autonomy in Supervision; External Facilitation (in Extrawork Environment); Innovation Values (in Professional Environment); Role Clarity; Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment); Passion for Innovation, and Internal Locus of Control in that order of classificatory strength as evidenced by their respective SDF coefficients. The SDF could be thought to be loaded positively with Need for Self-actualization, Autonomy in Supervision, Role Clarity; and Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment); and loaded negatively with all other variables. Considering the nature of this criterion variable and the SDF one would expect this function to be present in higher magnitude in "low" criterion group and correspondingly in lower magnitude in "high" criterion group. As evidenced by the centroids of groups in reduced space (centroid of group 1 = 0.55, group 2 = - 0.75) this expectation came true. The prediction results using this classification showed that 78.62 per cent of "grouped cases" could be correctly classified.

The results of discriminant analysis for the factor, namely Creative Abilities (Table 16) showed that some of the personal, organizational, and person's environmental forces' variables could significantly discriminate between the groups of people relatively low or high (median = 24.68)

Discriminant Analysis Results for the Personal, Organizational, and Person's Environmental Forces as the Discriminating, and Creative Abilities as the Criterion

Variables	IM	NSA	DPS	PI	S	CPA	ILC	PSP(PE)	WC
<u>SDF</u>									
Coefficients	0.25	- 0.24	- 0.22	- 0.20	- 0.19	- 0.18	- 0.18	0.19	- 0.17
Variables	TI	SC(EWE)	IV(PE)	FDT(PE)	FBA(EWE)	TY	IV(PPE)	TC	
<u>SDF</u>									
Coefficients	- 0.17	- 0.17	0.14	0.13	- 0.13	0.11	0.11	0.09	
Rc	χ^2	df	p	<u>Centroid of groups</u>		<u>Prediction</u>		<u>results</u>	
				Group 1	Group 2	Group 1	Group 2	Total	
0.62	136.05	17	0.00	0.53	- 0.72	76.8%	78.7%	77.59%	

on Creative Abilities, ($\chi^2_{(17)} = 13.05, p \leq .01$). The significant variables were Intrinsic Motivation, Need for Self-actualization; Determined, Persistent, and Self-starter; Passion for Innovation, Seniority; Courteous, Popular, and Altruistic; Internal Locus of Control; Penalty for Shabby Performance (in Professional Environment); Wholistic Concern, Task Identity; Stimulation for Creativity (in Extrawork Environment); Innovation Values (in Professional Environment); Freedom for Divergent Thought (in Professional Environment); Freedom of Belief and Action (in Extrawork Environment); Theory Y, Innovation Values (in Preprofessional Environment), and Time Constraint in that order of classifying strength as evidenced by their respective SDF coefficients. This discriminant function could be thought of as being loaded positively with Intrinsic Motivation, Theory Y, Time Constraint; Innovation Values (in Preprofessional Environment); Penalty for Shabby Performance (in Professional Environment); Freedom for Divergent Thought (in Professional Environment); and Innovation Values (in Professional Environment); and loaded negatively with all other variables. Considering the nature and the respective arithmetic signs of the discriminating variables entered in the SDF, this function seemed to represent a relatively undesirable state of affairs in terms of greater number of variables. Considering the fact that the criterion variable was something desirable,

namely creative Abilities, one would expect this function to be present in less magnitude in the "high" criterion group, and correspondingly in higher magnitude in "low" criterion group. The relative magnitudes of the centroids of groups in reduced space revealed that this in fact was so (centroid of group 1 = 0.53, group 2 = - 0.72), The prediction results using this classification function showed that 77.59 per cent of "grouped" cases could be correctly classified.

Antecedents discriminating between levels of competence.

As mentioned earlier competence had been conceptualized in terms of (a) the factors yielded by the perceived job competence questionnaire (six factors) and (b) indexes of generalized and specific competence (two variables). In order to identify some of the personal, organizational, and person's environmental forces' variables that could be used to discriminate between groups of people relatively high and low on these eight dimensions, correspondingly eight discriminant analyses were performed. Those would be described one by one.

Results showed (Table 17) that some of the personal, organizational, and person's environmental forces' variables could significantly discriminate between groups of respondents relatively low or high (median = 17.69) on the first dimension of competence, namely Competence Thema,

Discriminant Analysis Results for Personal, Organizational, and Person's Environmental Forces as the Discriminating, and Competence Theme as the Criterion Variable

Variables	NSA	EM	ILS	TC	QBR	SV	CPA	TY	FBA (EWE)
<u>SDF</u>									
Coefficients	0.35	0.33	0.29	0.24	0.24	0.22	0.22	- 0.21	- 0.21
Variables	APO (EWE & CE)		FDT (PE)		FO (PPE)				
<u>SDF</u>									
Coefficients	- 0.19		0.16		0.16				
<u>Rc</u>	χ^2	df	p	<u>Centroid of groups</u>		<u>Prediction results</u>			
				Group 1	Group 2	Group 1	Group 2	Total	
0.49	79.04	12	0.00	- 0.40	0.60	70.1%	74%	71.72%	

$(X^2_{(12)}, = 79.04, p = .01)$. The significant variables were Need for Self-actualization, Intrinsic Motivation, Internal Locus of Control, Time Constraint; Quiet, Bashful, and Reserved; Skills Variety; Courteous, Popular, and Altruistic; Theory Y; Freedom of Belief and Action (in Extrawork Environment); Autonomy and Result Orientation (in Extrawork and Childhood Environment); Freedom for Divergent Thought (in Professional Environment); and Stimulation, Encouragement, and Feedback (in Work Environment); in that order of classificatory strength as evidenced by their respective SDF coefficients. The discriminant function could be thought to be loaded negatively with Theory Y; Freedom of Belief and Action (in Extrawork Environment); and Autonomy and Result Orientation (in Extrawork and Childhood Environment); and loaded positively with all other variables. Considering the nature and the respective arithmetic signs of the variables entered in the SDF, this function seemed to represent relatively "desirable" state of affairs in terms of greater number of variables. Considering the fact that the criterion variable was something "desirable", namely Competence Thema, one would expect this function to be present in less magnitude in the "low" criterion group and correspondingly in higher magnitude in "high" criterion group. The relative magnitudes of the centroids of groups in reduced space revealed that this in fact was so (centroid of group 1 = - 0.40, group 2 = 0.60).

The prediction results using this classification function showed that 71.72 per cent of "grouped" cases could be correctly classified.

Results of the discriminant analysis (Table 18) for the second dimension of competence, namely Feedback and Accomplishment showed that $(X^2_{(12)} = 45.84, p \approx .01)$ some of the variables could significantly discriminate between groups of respondent relatively low or high (median = 7.11) on Feedback and Accomplishment. The significant variables were Task Identity, Time Constraint; Innovation Values (in Professional Environment); Freedom of Belief and Action (in Extrawork Environment); Passion for Innovation, Nurturant Participative Leadership Style; Quiet, Bashful, and Reserved; Autonomy in Supervision, Seniority, Advancement Opportunity; Stimulation for Creativity (in Extrawork Environment), and Self-esteem in that order of classificatory strength as evidenced by their respective SDF coefficients. The discriminant function could be thought of as being loaded positively with Time Constraint; Innovation Values (in Professional Environment); Freedom of Belief and Action (in Extrawork Environment); Nurturant Participant Leadership Style; Quiet, Bashful, and Reserved; Seniority, and Self-esteem, and loaded negatively with all other variables. Considering the nature and the respective arithmetic signs of the discriminating variables entered in the SDF, this

Discriminant Analysis Results for Personal, Organizational, and person's Environmental Forces as the Discriminating, and Feedback and Accomplishment as the Criterion Variable

Variables	TI	TC	IV(PE)	FBA(EWE)	PI	NPLS	QBR	AS
<u>SDF</u>								
Coefficients	- 0.48	0.44	0.36	0.35	- 0.28	0.28	0.26	- 0.24
Variables	BI	AO	SC(EWE)	SE				
<u>SDF</u>								
Coefficients	0.22	- 0.22	- 0.22	0.19				
<u>Rc</u>	<u>x²</u>	<u>p</u>	<u>Centroid of groups</u>		<u>Prediction results</u>			
			Group 1	Group 2	Group 1	Group 2	Total	
			0.39	45.84	12	0.00	0.33	- 0.45

function seemed to represent "undesirable" state of affairs. Considering the fact that the criterion variable was something "desirable", namely Feedback and Accomplishment, one would expect this function to be present in less magnitude in the "high" criterion group, and correspondingly in higher magnitude in "low" criterion group. The relative magnitudes of the centroids of groups in reduced space revealed that this in fact was so (centroid of group 1 = 0.33, group 2 = - 0.45). The prediction results using this classification function showed that 66.21 per cent of "grouped" cases could be correctly classified.

Table 19 shows the results of the discriminant analysis for the third dimension of competence, namely Environment Mastery. The significant variables that could discriminate ($\chi^2_{(16)} = 60.06, p = .01$) between groups of respondents relatively low and high (median = 5.66) on Environment Mastery were Internal Locus of Control; Innovation Values (in Preprofessional Environment); Expertise Recognition, Intrinsic Motivation; Freedom of Belief and Action (in Extrawork Environment); Freedom for Divergent Thought (in Professional Environment); Seniority; Stimulation, Encouragement, and Feedback (in Work Environment); Task Identity, Passion for Innovation; Quiet, Bashful, and Reserved; Wholistic Concern; Stimulation for Creativity (in Extrawork Environment); Determined, Persistent, and

Discriminant Analysis Results for personal, Organizational, and Person's Environmental Forces as the Discriminating, and Environment Mastery as the Criterion Variable

Variables	ILC	IV(PPE)	ETR	IM	FBA(EWE)	FDT(PE)	S	SEF(WE)
<u>SDF</u>								
Coefficients	0.46	0.40	- 0.34	0.34	- 0.31	- 0.31	0.29	0.28
Variables	TI	PI	QBR	WC	SC(EWE)	DPS	OWAJ	TC
<u>SDF</u>								
Coefficients	0.23	- 0.22	0.22	0.21	0.19	0.18	- 0.17	0.15
RC	χ^2	df	p	<u>Centroids of groups</u>		<u>Prediction results</u>		
				Group 1	Group 2	Group 1	Group 2	Total
0.44	60.06	16	0.00	- 0.29	0.66	69.8%	76.1%	71.72%

Self-starter; Obedient, Willing to Accept Judgements; and Time Constraint in that order of classificatory strength as evidenced by their respective SDF coefficients. This SDF could be thought to be loaded negatively with Expertise Recognition; Freedom of Belief and Action (in Extrawork Environment); Freedom for Divergent Thought (in Professional Environment); Passion for Innovation; and Obedient, Willing to Accept Judgements; and loaded positively with all other variables. Considering the nature and the respective arithmetic signs of the discriminating variables entered in the SDF, this function seemed to represent "desirable" state of affairs in terms of greater number of variables. Considering the fact that the criterion variable was also something "desirable", namely Environment Mastery, one would expect this function to be present in high magnitude in "high" criterion group and in less magnitude in "low" criterion group, and so it was evidenced by the centroids of the groups in reduced space (centroid of group 1 = - 0.29, group 2 = 0.66). The prediction results using this classification function showed that 71.72 per cent of "grouped" cases could be correctly classified.

The results (Table 20) of the discriminant analysis for the fourth dimension of competence showed that some of the personal, organizational, and person's environmental forces' variables could significantly discriminate between

Discriminant Analysis Results for Personal, Organizational, and person's Environmental Forces as the Discriminating, and Job Involvement as the Criterion Variable

Variables	SEF (WE)	SV	OWAJ	TC	EF (EWE)	FBA (EWE)	NSA	AO
<u>SDF</u>								
Coefficients	0.52	- 0.42	- 0.41	- 0.34	- 0.34	- 0.33	0.32	0.31
Variables	TI	SE	FO(PPE)	RCL	AS	FDT(PE)		
<u>SDF</u>								
Coefficients	0.26	- 0.26	0.23	- 0.19	0.15	- 0.14		
<u>Rc</u>	χ^2	df	p	<u>Centroids of groups</u>		<u>Prediction results</u>		
				Group 1	Group 2	Group 1	Group 2	Total
0.43	56.97	14	0.00	- 0.35	0.52	71.1%	71.8%	71.38%

groups of respondents relatively low and high (median = 6.04) on this dimension of competence, namely Job Involvement ($\chi^2_{(14)} = 56.97, p \leq .01$). The significant variables were Stimulation, Encouragement, and Feedback (in Work Environment); Skills Variety; Obedient, Willing to Accept Judgements; Time constraint, External Facilitation (in Extrawork Environment); Freedom of Belief and Action (in Extrawork Environment); Need for Self-actualization, Advancement Opportunity, Task Identity, Self-esteem; Feedback and Opportunity (in Preprofessional Environment); Role Clarity, Autonomy in Supervision; and Freedom for Divergent Thought (in Professional Environment) in that order of classificatory strength as evidenced by their respective SDF coefficients. The SDF could be thought to be loaded positively with Stimulation, Encouragement, and Feedback (in work environment); Need for Self-actualization, Advancement Opportunity, Task Identity; Feedback and Opportunity (in Preprofessional Environment); and Autonomy in Supervision; and loaded negatively with all other variables. This SDF apparently was present in less magnitude in "low" criterion group and correspondingly in higher magnitude in high criterion group as it was revealed by the centroids of the groups in reduced space (centroid of group 1 = - 0.35, group 2 = 0.52). The prediction results using this classification function showed that 71.38 per cent of "grouped" cases could

be correctly classified.

Next Discriminant analysis results showed that some of the personal, organizational, and person's environmental forces' variables could significantly discriminate (Table 21) between groups of respondents relatively low or high (median = 10.42) on the fifth dimension of competence, namely Personal Target Realization ($\chi^2_{(12)} = 119.91, p \leq .01$). The significant factors were Internal Locus of Control, Task Identity; Stimulation for Creativity (in Extrawork Environment); Passion for Innovation, Seniority; Autonomy and Result Orientation (in Extrawork and Childhood Environment); Freedom for Divergent Thought (in Professional Environment); Freedom of Belief and Action (in Extrawork Environment); Intrinsic Motivation, Task Structure, Constraint of Change; and Courteous, Popular, and Altruistic; in that order of classificatory strength as evidenced by their respective SDF Coefficients. This discriminant function could be thought to be loaded positively with Freedom of Belief and Action (in Extrawork Environment); and Intrinsic Motivation, and loaded negatively with all other variables. Considering the fact that criterion variable was something "desirable" one would expect this function to be present in less magnitude in "high" criterion group and correspondingly in high magnitude in "low" criterion group. The relative magnitudes of the centroids of groups revealed that this in fact was so

Discriminant Analysis Results for Personal, Organizational and Person's Environmental Forces as the Discriminating, and personal Target Realization as the Criterion Variable

Variables	ILC	TI	SC (EWE)	PI	S	ARO (EWE & CE)
<u>SDF</u>						
Coefficients	- 0.39	- 0.33	- 0.32	- 0.25	- 0.23	- 0.19
Variables	FDT (PE)	FBA (EWE)	IM	TS	CTC	CPA
<u>SDF</u>						
Coefficients	- 0.18	0.17	0.15	- 0.12	- 0.12	- 0.10
<u>Rc</u>	χ^2	df	p	<u>Prediction results</u>		
				<u>Centroid of groups</u>		
				Group 1	Group 2	Total
0.59	119.911	12	0.00	0.57	- 0.61	74.0% 75.0% 74.48%

(centroid of group 1 = 0.57, group 2 = - 0.61). The prediction results using this classification function showed that 74.48 per cent of "grouped" cases could be correctly classified.

Results of the discriminant analysis for the sixth dimension of competence (Table 22), namely Work Inclination and Control, showed ($\chi^2_{(11)} = 59.08, p = .01$) that some of the personal, organizational, and person's environmental forces' variables could significantly discriminate between the groups of respondents relatively low or high (median = 6.38) on this dimension. The significant variables were Decentralization; Quiet, Bashful, and Reserved; Seniority, Informal Work Mechanism, Time Constraint, Task Identity; Penalty for Shabby Performance (in Professional Environment); Stimulation, Encouragement, and Feedback (in Work Environment); Autonomy in Supervision, Theory Y, and Passion for Innovation, in that order of classifying strength as evidenced by their respective SDF coefficients. The discriminant function could be thought of as being loaded positively with Quiet, Bashful, and Reserved; Seniority, Informal Work Mechanism, Time Constraint, Task Identity, and Penalty for Shabby Performance (in Professional Environment), but loaded negatively with all other variables. This function was present in less magnitude in high criterion group and correspondingly in high magnitude in low criterion group,

Discriminant Analysis Results for Personal, Organizational, and Person's Environmental Forces as the Discriminating, and Work Inclination and Control as the Criterion Variable

Variables	D	QRR	S	IWM	TC	TI
<u>SDF</u>						
Coefficients	- 0.48	0.45	0.38	0.29	0.27	0.25
Variables	PSP(PE)	SEF(WE)	AS	TY	PI	
<u>SDF</u>						
Coefficients	0.18	- 0.18	- 0.18	- 0.16	- 0.15	
RC	χ^2	df	p	<u>Centroid of groups</u>		<u>Prediction results</u>
				Group 1	Group 2	Group 1 Group 2 Total
0.43	59.08	11	0.00	0.40	- 0.46	69.0% 72.6% 70.69%

as evidenced by the centroids of groups in reduced space (centroid of group 1 = 0.40, group 2 = - 0.46). The prediction of results using this classification function showed that 70.79 per cent of "grouped" cases could be correctly classified.

Result of the discriminant analysis (Table 23) for Generalized Competence, showed $(X^2_{(15)} = 53.24, p = .01)$ that some of the personal, organizational, and person's environmental forces' variables could significantly discriminate between the groups of respondents relatively low and high (median = 4.18) on Generalized Competence. The significant factors were Nurturant Participative Leadership Style, Internal Locus of Control; Freedom for Divergent Thought (in Professional Environment); Obedient, Willing to Accept Judgements; Feedback and Opportunity (in Preprofessional Environment); Passion for Innovation; Courteous, Popular, and Altruistic; Expertise Recognition; Innovation Values (in Professional Environment); Autonomy and Result Orientation (in Extrawork and Childhood Environment); Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment); Autonomy in Supervision, Role Clarity, Decentralization, and Seniority, in that order of classificatory strength as evidenced by their respective SDF Coefficients. This discriminant function could be thought to be loaded positively with

Table 23

Discriminant Analysis Results for Personal, Organizational, and Person's Environmental Forces as the Discriminating, and Generalized Competence as the Criterion Variable

Variables	NPLS	ILC	FDT(PE)	OWAJ	FO(PPE)	PI	CPA	ETR
<u>SDF</u>								
Coefficients	0.54	- 0.45	- 0.41	- 0.37	0.37	0.33	0.32	0.30
Variables	IV(PE)	ARO(EWE & CE)	EPCI (PPE & PE)	AS	RCL	D	S	
<u>SDF</u>								
Coefficients	0.25	- 0.22	- 0.20	- 0.19	- 0.19	- 0.18	0.17	
χ^2	df	p	<u>Centroid of groups</u>					
			Group 1	Group 2	Group 1	Group 2	Total	
0.42	53.24	15	0.00	- 0.44	68.2%	68.1%	68.17%	

Nurturant Participative Leadership Style; Feedback and Opportunity (in Preprofessional Environment); Courteous, Popular, and Altruistic; Innovation Values (in Professional Environment), and Seniority, but loaded negatively with all other variables. Considering the nature and the respective arithmetic signs of the discriminating variables entered in the SDF, this function seemed to represent relatively "undesirable" state of affairs in terms of greater number of variables. Considering the fact that the criterion variable was something "desirable", namely Generalized Competence, one would expect this function to be present in less magnitude in the "high" criterion group and correspondingly in high magnitude in "low" criterion group. The relative magnitudes of the centroids of groups in reduced space revealed that this in fact was so (centroid of group 1 = 0.39, group 2 = - 0.44). The prediction results using this classification function showed that 68.17 per cent of "grouped" cases could be correctly classified.

Results of discriminant analysis for Specific Competence, (Table 24) showed that $(\chi^2_{(11)} = 37.07, p \leq .01)$ some of the personal, organizational, and person's environmental forces' variables could significantly discriminate between the groups of respondents relatively high or low (median = 1.89) on this dimension of competence. The significant variables were Advancement Opportunity; Innovation Values (in

Discriminant Analysis Results for Personal, Organizational, and Person's Environmental Forces as the Discriminating, and Specific Competence as the Criterion Variable

Variables	AO	IV(PPE)	ETR	EPCI (PPE & PE) FBA (EWE)	SE
<u>SDF</u>					
Coefficients	0.65	0.61	- 0.58	- 0.47	0.42
Variables	RCL	OWAJ	EF (EWE)	S	QBR
<u>SDF</u>					
Coefficients	- 0.34	0.27	- 0.28	- 0.25	- 0.23
Rc	χ^2	p	<u>Centroid of groups</u>		
			Group 1	Group 2	Prediction results
0.35	37.07	11	0.00	- 0.20	0.61
					65.8%
					71.8%
					67.24%
					Total

Preprofessional Environment); Expertise Recognition; Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment); Freedom of Belief and Action (in Extrawork Environment); Self-esteem, Role Clarity; Obedient, Willing to Accept Judgements; External Facilitation (in Extrawork Environment), Seniority; and Quiet, Bashful, and Reserved; in that order of classificatory strength as evidenced by their respective SDF coefficients. The discriminant function could be thought to be loaded positively with Advancement Opportunity; Innovation Values (in Preprofessional Environment), Self-esteem; and Obedient, Willing to Accept Judgements; and loaded negatively with all other variables. This function seemed to be present in less magnitude in "low" criterion group, and correspondingly in high magnitude in "high" criterion group as evidenced by the centroids of group in reduced space (centroid of group 1 = - 0.20, group 2 = 0.61). The prediction results using this classification function showed that 67.24 per cent of the "grouped" cases could be correctly classified.

Antecedents discriminating between levels of excellence.

The phenomena of "excellence" could be said to have three empirical components, (as evidenced by the factor analysis Appendix B), namely Quality Conscious Entrepreneurial Excellence, Excellence Recognition, and Output Excellence. In order to indentify some of the personal, organizational,

and person's environmental forces' variables that could be used to discriminate between the groups of people relatively low or high on these three factors of excellence, three discriminant analyses were performed.

Results of the discriminant analysis (Table 25) for the first factor of excellence, namely Quality Conscious Entrepreneurial Excellence showed ($\chi^2_{(12)} = 62.37, p \leq .01$) that some of these factors could significantly discriminate between the groups of respondents relatively low or high (median = 10.79) on this factor. The significant factors were Feedback and Opportunity (in Preprofessional Environment); Advancement, Opportunity; Stimulation for Creativity (in Extrawork Environment); Decentralization, Informal Work Mechanism; Quiet, Bashful, and Reserved; Determined, Persistent, and Self-starter; Autonomy and Result Orientation (in Extrawork and Childhood Environment); Passion for Innovation, Need for Self-actualization; Obedient, Willing to Accept Judgements; and Innovation Values (in Preprofessional Environment), in that order of classificatory strength as evidenced by their respective SDF coefficients. This discriminant function could be thought to be loaded positively with Feedback and Opportunity (in Preprofessional Environment), Decentralization; and Obedient, Willing to Accept Judgements; and loaded negatively with all other variables. Considering the nature and the respective arithmetic signs of the

Discriminant Analysis Results for Personal, Organizational, and Person's Environmental Forces as the Discriminating, and Quality Conscious Entrepreneurial Excellence as the Criterion

Variables	FO (PPE)	AO	SC (EWE)	D	IWM	OBR			
<u>SDF</u>									
Coefficients	0.42	- 0.40	- 0.36	0.31	- 0.30	- 0.28			
Variables	TPS	ARO (EWE & CE)	PI	NSA	OWAJ	IV (PPE)			
<u>SDF</u>									
Coefficients	- 0.22	- 0.22	- 0.21	- 0.21	0.20	- 0.16			
<u>Rc</u>	<u>X²</u>	<u>df</u>	<u>p</u>	<u>Centroid of groups</u>			<u>Prediction results</u>		
				Group 1	Group 2	Total	Group 1	Group 2	Total
0.45	62.37	12	0.00	0.35	- 0.57	66.1%	69.1%	66.1%	67.93%

discriminating variables entered in the SDF, this function seemed to represent relatively "undesirable" state of affairs in terms of greater number of factors. Considering the fact that the criterion variable was something "desirable", namely Quality Conscious Entrepreneurial Excellence, one would expect this function to be present in less magnitude in the "high" criterion group and correspondingly in higher magnitude in "low" criterion group. The relative magnitudes of the centroids of groups in reduced space revealed that this in fact was so (centroid of group 1 = 0.35, group 2 = - 0.57). The prediction results using this classification function showed that 67.93 per cent of "grouped" cases could be correctly classified.

The discriminant analysis result (Table 26) for the second factor of excellence, namely Excellence Recognition, showed that some of these variable could significantly discriminate ($\chi^2_{(12)} = 77.30, p = .01$) between the group of respondents relatively high or low (median = 15.51) on this factor. The significant factors were Internal Locus of Control; Courteous, Popular, and Altruistic; Nuturant Participative Leadership Style, Need for Self-actualization, Advancement Opportunity, Task Identity; Freedom of Belief and Action (in Extrawork Environment); Stimulation, Encouragement, and Feedback (in Work Environment); Obedient,

Table 26

Discriminant Analysis Results for Personal, Organizational, and Person's Environmental Forces as the Discriminating, and Excellence Recognition as the Criterion Variable

Variables		ILC	CPA	NPLS	NSA	AO	TI
<u>SDF</u>							
Coefficients		- 0.66	- 0.35	0.30	- 0.28	- 0.27	0.24
Variables		FBA (EWE)	SEF (WE)	OWAJ	DPS	TS	PD
<u>SDF</u>							
Coefficients		0.22	- 0.21	- 0.18	0.15	0.14	- 0.14
<u>Rc</u>	χ^2	<u>df</u>	<u>p</u>	<u>Centroid of groups</u>		<u>Prediction results</u>	
				Group 1	Group 2	Group 1	Group 2
						Total	Total
0.49	77.30	12	0.00	0.49	- 0.49	75.7%	74.14%

Willing to Accept Judgements; Determined, Persistent, and Self-starter; Task Structure, and Passion for Distinctiveness, in that order of classificatory strength, as evidenced by their respective SDF Coefficients. The discriminant function could be thought to be loaded positively with Nurturant Participative Leadership Style, Advancement Opportunity; Freedom of Belief and Action (in Extrawork Environment); Determined, Persistent, and Self-starter; and Task Structure, and loaded negatively with all other variables. This function was present in higher magnitude in the "low" criterion group and correspondingly in less magnitude in "high" criterion group, as evidenced by the centroids of groups (centroid of group 1 = 0.49, group 2 = - 0.49). The prediction results using this classification function showed that 74.14 per cent of "grouped" cases could be correctly classified.

Results of the discriminant analysis (Table 27) for the third factor of excellence, namely Output Excellence, showed ($\chi^2_{(15)} = 68.57, p \leq .01$) that some of the personal, organizational, and person's environmental forces' variables could significantly discriminate between the groups of respondents relatively low or high (median = 7.77) on this factor. The significant factors were Wholistic Concern, Decentralization, Skills Variety, Nurturant Participative Leadership Style, Internal Locus of Control;

Discriminant Analysis Results for Personal, Organizational, and Person's Environmental Forces as the Discriminating, and Output Excellence as the Criterion Variable

Variables	WC	D	SV	NPLS	ILC	OWAJ	ETR	TI
<u>SDF</u>								
Coefficients	0.42	0.38	0.37	- 0.34	0.29	0.29	- 0.29	0.28
Variables	CFA	SC(EWE)	S	QBR	TC	FBA(EWE)	TY	
<u>SDF</u>								
Coefficients	0.24	- 0.22	0.20	0.18	- 0.17	- 0.17	- 0.14	
<u>Rc</u>	<u>x²</u>	<u>df</u>	<u>p</u>	<u>Centroid of groups</u>		<u>Prediction results</u>		
				Group 1	Group 2	Group 1	Group 2	Total
0.47	68.57	15	0.00	- 0.19	1.00	77.3%	72.1%	76.65%

Obedient, Willing to Accept Judgements; Expertise Recognition, Task Identity; Courteous, Popular, and Altruistic; Stimulation for Creativity (in Extrawork Environment), Seniority; Quiet, Bashful, and Reserved; Time Constraint; Freedom of Belief and Action (Extrawork Environment); and Theory Y, in that order of classificatory strength as evidenced by their respective SDF coefficients. This discriminant function could be thought to be loaded negatively with Nurturant Participative Leadership Style, Expertise Recognition, Stimulation for Creativity (in Extrawork Environment), Time Constraint; Freedom of Belief and Action (in Extrawork Environment); and Theory Y, and loaded positively with all other variables. Considering the nature and the respective arithmetic signs of the discriminating variables entered in the SDF, this function seemed to represent relatively "undesirable" state of affairs in terms of greater number of variables. Considering the fact that the criterion variable was something "desirable", namely Output Excellence, one would expect this function to be present in less magnitude in "low" criterion group and correspondingly in higher magnitude in "high" criterion group. The relative magnitudes of the centroids of groups in reduced space revealed that this in fact was so (centroid of group 1 = 0.19, group 2 = 1.00). The prediction result using this classification function showed

that 76.65 per cent of "grouped" cases could be correctly classified.

Question 7

What are the relationships between dimensions of creativity and competence, creativity and excellence, competence and excellence, and creativity, competence, and excellence?

Relationship of dimensions of creativity with the dimensions of competence. In order to see the relationship between the dimensions of creativity and the dimensions of competence, a canonical correlation analysis was performed. Three out of possible eight canonical correlations (Table 28) turned out to be significant.

The first CC results ($R_c = 0.68$, $R_c^2 = 0.47$, $X^2_{(64)} = 276.33$, $p = .01$) showed that the dimensions of creativity were related significantly to the dimensions of competence. The two sets of variables mutually shared 47 per cent of the variance. The redundancy index (0.1609) for the dimensions of competence showed that 0.1609 of the total variance (0.3451) in the canonical variate composed of dimensions of competence was shared with or "explained" by the dimensions of creativity. The first left hand variate composed of dimensions of creativity could be thought to be loaded positively with Creative Abilities, Analytical Approach to Problem solving, Incubation and Illumination;

Table 28

Canonical Correlation Showing Relationships of Dimensions of Creativity with the Dimensions of Competence

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
Left hand set			
CA	1.00	0.05	- 0.17
AAPS	0.57	0.02	0.17
II	0.60	- 0.25	0.54
OAPS	0.76	0.62	0.37
NCI	0.39	- 0.21	0.74
ASAPS	0.88	- 0.04	- 0.03
SAPS	0.70	- 0.03	0.24
ANAPS	0.66	- 0.21	0.40
Right hand set			
CT	0.92	0.32	0.17
FA	- 0.08	0.11	- 0.79
EM	0.72	- 0.46	0.11
JI	- 0.16	0.20	- 0.25
PTR	1.00	0.04	- 0.09
WIC	- 0.09	0.30	- 0.79

(table continues)

Table 28 (continued)

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
GC	0.24	0.24	- 0.07
SC	- 0.06	0.51	0.32
<u>Rc</u>	0.68	0.36	0.32
<u>Rc</u> ²	0.47	0.13	0.10
Chi-square	276.33	99.50	60.32
<u>df</u>	64	49	36
<u>p</u>	≅ 0.01	≅ 0.01	≅ 0.01
Variance <u>LHS</u>	0.5463	0.0679	0.1581
Redundancy <u>LHS</u>	0.2548	0.0088	0.0161
Variance <u>RHS</u>	0.3451	0.0969	0.1832
Redundancy <u>RHS</u>	0.1609	0.0126	0.0186

Optimizing Approach to Problem solving, Nonconventional Ideation, Associative Approach to Problem solving, Synthesizing Approach to Problem solving, and Analogical Approach to Problem solving. This variate was related significantly to the right hand canonical variate, composed of dimensions of competence, that was loaded positively with Competence Thema, Environment Mastery, and Personal Target Realization.

The second CC results ($\underline{Rc} = 0.36$, $\underline{Rc}^2 = 0.13$, $\chi^2_{(49)} = 99.50$, $p \leq .01$) showed some of the dimensions of creativity were related significantly to the dimensions of competence and shared a variance of 13 per cent. The redundancy index (0.0125) for the dimensions of competence showed that 0.0125 of the total variance (0.0969) extracted for the dimensions of competence was shared with the dimensions of creativity. The left hand variate could be thought to be loaded positively with Optimizing Approach to Problem solving. The right hand variate could be thought to be loaded positively with Competence Thema; Work Inclination and Control; and Specific Competence, and loaded negatively with Environment Mastery.

The third CC results ($\underline{Rc} = 0.32$, $\underline{Rc}^2 = 0.10$, $\chi^2_{(36)} = 60.32$, $p \leq .01$) showed that some dimensions of creativity were related significantly to the some dimensions of competence. The two sets of variables mutually shared a

variance of 10 per cent. The redundancy index (0.0186) showed that 0.0186 of the total variance (0.1832) in the canonical variate composed of dimensions of competence was shared with the canonical variate composed of dimensions of creativity. The left hand variate was loaded positively with Incubation and Illumination; Optimizing Approach to Problem solving, Nonconventional Ideation, and Analogical Approach to Problem solving. The right hand variate was loaded positively with Specific Competence and loaded negatively with Feedback and Accomplishment; and Work Inclination and Control.

Relationship of dimensions of creativity with dimensions of excellence. Table 29 presents the results of canonical correlation analysis in which dimensions of creativity were related significantly to the dimensions of excellence. Only one out of possible three canonical correlations turned out to be significant ($R_c = 0.58$, $R_c^2 = 0.34$, $\chi^2_{(24)} = 141.96$, $p \approx .01$). The two sets of variables mutually shared 34 per cent of the variance. The redundancy index (0.3039) for the factors of excellence showed that 0.3039 of the total variance (0.8977) in factors of excellence was shared with the dimensions of creativity. The left hand variate composed of the dimensions creativity could be thought to be loaded positively with Creative Abilities, Analytical Approach to Problem solving; Incubation and Illumination,

Table 29

Canonical Correlation Showing Relationships of Dimensions
of Creativity with the Dimensions of Excellence

Variables	Set 1
	Loadings
Left hand set	
CA	1.00
AAPS	0.68
II	0.46
OAPS	0.71
NCI	0.19
ASAPS	0.89
SAPS	0.75
ANAPS	0.57

(table continues)

Table 29 (continued)

Variables	Set 1
	Loadings
Right hand set	
QCEE	0.99
EXR	0.76
OEX	1.00
<u>Rc</u>	0.58
<u>Rc</u> ²	0.34
Chi-square	141.96
<u>df</u>	24
<u>p</u>	≤ 0.01
Variance <u>LHS</u>	0.5259
Redundancy <u>LHS</u>	0.1301
Variance <u>RHS</u>	0.8377
Redundancy <u>RHS</u>	0.3039

Optimizing Approach to Problem solving, Associative Approach to Problem solving, Synthesizing Approach to Problem solving, and Analogical Approach to Problem solving. This canonical variate was related significantly to the variate composed of factors of excellence, that was loaded positively with Quality Conscious Entrepreneurial Excellence, Excellence Recognition, and Output Excellence.

Relationship of dimensions of competence with the dimensions of excellence. Table 30 presents the results of canonical correlation analysis in which the dimensions of competence were related significantly to the factors of excellence ($R_c = 0.56$, $R_c^2 = 0.31$, $X^2_{(24)} = 124.36$, $p \leq .01$). The two sets of variables mutually shared a variance of 31 per cent. The redundancy index (0.2806) for the factors of excellence showed that 0.2806 variance of the total variance (0.3928) in the factors of excellence was shared with or "explained" by the dimensions of competence. The left hand variate composed of dimensions of competence could be thought to be loaded positively with Competence Thema, Environment Mastery, Personal Target Realization, and Generalized Competence. This variate was significantly related to the right hand variate that could be thought to be loaded positively with Quality Conscious Entrepreneurial Excellence, Excellence Recognition, and Output Excellence.

Table 30

Canonical Correlation Showing Relationship of Dimensions
of Competence with the Dimensions of Excellence

Variables	Set 1
	Loadings
Left hand set	
CT	0.97
FA	0.15
EM	0.65
JI	0.00
PTR	1.00
WIC	0.03
GC	0.70
SC	0.02
	<u>(table continues)</u>

Table 30 (continued)

	Set 1
Variables	Loadings
Right hand set	
QCEE	0.90
EXR	0.90
OEX	1.00
<u>Rc</u>	0.56
<u>Rc</u> ²	0.31
Chi-square	121.36
<u>df</u>	24
<u>p</u>	≅ 0.01
Variance <u>LHS</u>	0.3326
Redundancy <u>LHS</u>	0.1202
Variance <u>RHS</u>	0.8928
Redundancy <u>RHS</u>	0.2806

Relationship of dimensions of creativity and competence with the dimensions of excellence. Table 31 presents the results of canonical correlation analysis in which the dimensions of creativity and competence were related significantly to the factors of excellence. Only one canonical correlation out of possible three turned out to be significant ($R_c = 0.65$, $R_c^2 = 0.43$, $X^2_{(48)} = 194.10$, $p < .01$). The two sets of variables mutually shared 48 per cent of the variance. The redundancy index (0.3822) for the factors of excellence showed that 0.3822 of the total variance (0.8975) in the factors of excellence was shared with the dimensions of creativity and competence. The left hand variate, composed of dimensions of creativity and competence could be thought to be loaded positively with Creative Abilities, Analytical Approach to Problem solving; Incubation and Illumination; Optimizing Approach to Problem solving, Associative Approach to Problem solving, Synthesizing Approach to Problem solving, Analogical Approach to Problem solving, Competence Thema, Environment Mastery, Personal Target Realization, and Generalized Competence. This canonical variate was related significantly to the right hand variate composed of factors of excellence. This right hand variate could be thought to be loaded positively with Quality Conscious Entrepreneurial Excellence, Excellence Recognition, and Output Excellence.

Table 31

Canonical Correlation Showing Relationship of Dimensions of Creativity and Competence with the Dimensions of Excellence

Variables	Set 1
	Loadings
Left hand set	
CA	1.00
AAPS	0.61
II	0.41
OAPS	0.64
NCI	0.15
ASAPS	0.80
SAPS	0.67
ANAPS	0.50
CT	0.83
FA	0.14
EM	0.56
JI	- 0.01
PTR	0.94
WIC	0.01
GC	0.60
SC	0.02

(table continues)

Table 31 (continued)

Variables	Set 1
	Loadings
Right hand set	
QCEE	0.96
EXR	0.85
OEX	1.00
<u>Rc</u>	0.65
<u>Rc</u> ²	0.43
Chi-square	194.10
<u>df</u>	48
<u>p</u>	≅ 0.01
Variance <u>LHS</u>	0.3510
Redundancy <u>LHS</u>	0.1495
Variance <u>RHS</u>	0.8975
Redundancy <u>RHS</u>	0.3822

Question 8

What kind of (dimensions of) creativity and competence discriminate between low and high magnitude of the dimensions of excellence?

In order to identify some of the more important dimensions of creativity and competence, that could be used to discriminate between the groups of people relatively low or high on the dimensions of excellence, three discriminant analyses were performed.

The result of the discriminant (Table 32) analysis for the first factor of excellence ($\chi^2_{(9)} = 50.18, p = .01$) showed that some of the dimensions of creativity and competence could significantly discriminate between the groups of respondents relatively high or low (median = 10.79) on the first factor of excellence, namely Quality Conscious Entrepreneurial Excellence. The significant factors were Synthesizing Approach to Problem solving; Feedback and Accomplishment; Analytical Approach to Problem solving, Associative Approach to Problem solving, Personal Target Realization, Analogical Approach to Problem solving, Generalized Competence; Specific Competence, and Work Inclination and Control, in that order of classificatory strength as evidenced by their respective SDF coefficients. This discriminant function could be thought of as loaded positively with Work Inclination and Control; and loaded

Table 32

Discriminant Analysis Results for the Dimensions of Creativity and Competence as Discriminating, and Quality Conscious Entrepreneurial Excellence as the Criterion Variable

Variables	SAPS	FA	AAPS	ASAPS	PTR	ANAPS	GC	SC	WIC
<u>SDF</u>									
Coefficients	- 0.43	- 0.28	- 0.26	- 0.19	- 0.24	- 0.19	- 0.17	- 0.16	0.15
<u>Rc</u>	<u>x²</u>	<u>df</u>	<u>p</u>	<u>Centroid of groups</u>					
				Group 1	Group 2	Group 1	Group 2	Total	
0.40	50.18	9	0.00	0.31	- 0.52	67.4%	67.0%	67.2%	

negatively with all other variables. Considering the nature and the respective signs of the discriminating variables entered in the SDF, this function seemed to represent relatively "undesirable" state of affairs in terms of greater number of variables. Considering the fact that the criterion variable was something "desirable, namely Quality Conscious Entrepreneurial Excellence, one would expect this function to be present in less magnitude in the "high" criterion group and correspondingly in higher magnitude in the "low" criterion group. The relative magnitudes of the centroids of groups in reduced space revealed that this in fact was so (centroid of group 1 = 0.31, group 2 = - 0.52). The prediction results using this classification function showed that 67.2 per cent of "grouped" cases could be correctly classified.

Result of discriminant analysis (Table 33) for the second dimension of excellence, namely Excellence Recognition, showed ($X^2_{(3)} = 41.30$, $p \leq .01$) that some of the dimensions of creativity and competence could significantly discriminate between the group of respondents relatively high or low (median = 15.51) on this factor. The significant variables were Generalized Competence, Competence Thema; Incubation and Illumination; Environment Mastery, Analytical Approach to Problem solving, Synthesizing Approach to Problem solving, Personal Target Realization; and Feedback and

Discriminant Analysis Results for the Dimensions of Creativity and Competence as the Discriminating, and Excellence Recognition as the Criterion Variable

Variables	GC	CT	II	EM	AAPS	SAPS	PTR	FA
<u>SDF</u>								
Coefficients	- 0.55	- 0.41	- 0.35	- 0.27	- 0.24	- 0.19	0.19	- 0.17
<u>Rc</u>	<u>χ^2</u>	<u>p</u>	<u>Centroid of groups</u>		<u>Prediction results</u>			
			Group 1	Group 2	Group 1	Group 2	Total	
0.37	41.30	8	0.00	0.37	- 0.36	67.4%	63.7%	65.52%

Accomplishment; in that order of classificatory strength as evidenced by their respective SDF coefficients. This discriminant function could be thought to be loaded positively with personal Target Realization and loaded negatively with all other variables. Considering the nature and arithmetic signs of the SDF, this function seemed to represent an "undesirable" state of affairs. Considering the fact that criterion variable, Excellence Recognition, was something "diseable", one would expect this function to be present in less magnitude in "high" criterion group and correspondingly in high magnitude in "low" criterion group. This expectation came true as was evidenced by the relative magnitudes of the centroids in groups (centroid of group 1 = 0.37, group 2 = - 0.36). The prediction results using this classification function showed that 65.52 per cent of "grouped" cases could be correctly classified.

Results of the discriminant analysis for the third factor of excellence (Table 34), namely Output Excellence ($\chi^2_{(9)} = 47.68, p \leq .01$) showed that some of the dimensions of creativity and competence could significantly discriminate between the groups of respondents relatively high or low (median = 7.77) on this factor. The significant variables were Environment Mastery, Synthesizing Approach to Problem solving, Optimizing Approach to Problem solving, Specific Competence, Generalized Competence, Associative Approach to

Discriminant Analysis Results for the Dimensions of Creativity and Competence as the Discriminating, and Output Excellence as the Criterion Variable

Variables	EM	SAPS	OAPS	SC	GC	ASPS	CT	NCI	JI
<u>SDF</u>									
Coefficients	- 0.41	- 0.41	- 0.28	- 0.24	- 0.22	- 0.22	- 0.21	0.18	0.15
<u>Rc</u>	χ^2	<u>df</u>	<u>p</u>	<u>Centroid of groups</u>		<u>Prediction results</u>			
				Group 1	Group 2	Group 1	Group 2	Total	
				0.39	47.68	9	0.00	0.16	- 0.94

Problem solving, Competence Thema, Nonconventional Ideation, and Job Involvement in that order of classificatory strength as evidenced by their respective SDF coefficients. This SDF could be thought to be loaded positively with Nonconventional Ideation and Job Involvement and loaded negatively with all other variables. Considering the nature and the respective arithmetic signs of the SDF this function seemed to represent an "undesirable" state of affairs in terms of greater number of variables. Considering the fact that criterion variable was something "desirable", namely Output Excellence, one would expect this function to be present in higher magnitude in "low" criterion group and correspondingly in less magnitude in "high" criterion group. The relative magnitudes of the centroids of groups in reduced space revealed that this in fact was so (centroid of group 1 = 0.16, group 2 = - 0.94). The prediction result using this classification function showed that 69.66 per cent of "grouped" cases could be correctly classified.

Question 9

How the various dimension(s) of creativity, competence, and excellence and other related relevant variables differ on an average across the factors of the (private and public) ownership, and (lower, middle, and high) hierarchical level?

In order to see the 'effect' of ownership (private vs public) and hierarchical position (low, middle, and high) on the variables, 2 x 3 (ownership x hierarchy) univariate factorial analyses of variance were calculated. Out of 60 variables ANOVAs for 44 did not yield any significant F ratios. None of the ANOVAs for the dimensions of creativity turned out to be significant. Results of ANOVAs that yielded at least one significant main effect (15 in total) are presented in Table 35. Only one ANOVA yielded a significant interaction effect which was for Constraint of Change as the dependent measure. Results of this ANOVA would be presented in Table 36 and Figure 2. General description of the sixteen ANOVA results follows.

Dimensions of competence as a function of ownership and hierarchical level. The ANOVA results for Competence Thema showed that the main effect of ownership was significant. This meant that respondents on an average showed differential magnitudes of Competence Thema across the variable ownership. Specifically the respondents in the private organizations showed more ($\bar{M} = 18.45$) Competence Thema than their public organizations' counterparts ($\bar{M} = 17.18$, $F_{(1,284)} = 7.75$, $p \leq .01$).

For Environment Mastery the main effect of ownership was significant ($F_{(1,284)} = 24.77$, $p \leq .01$). The cell means across the ownership revealed that the executives from private organizations ($\bar{M} = 6.25$) showed greater amount of Environment Mastery than their counterparts belonging to

Table 35

Analysis of Variance Results Showing Significant Mean Differences Across Ownership and Hierarchy level

Variables	Ownership				Hierarchical levels				
	Private		Public		F (1,284)	Low		Middle	
	M	MS	M	MS		M	MS	M	MS
	18.45	17.18	97.36	7.75**	17.27	17.74	17.84	8.51	0.67
CT	6.24	5.08	89.39	24.77**	5.40	5.48	5.47	0.42	0.12
EM	5.78	6.27	13.88	3.89*	5.66	6.09	6.68	24.25	6.78**
JT	3.77	3.74	0.09	0.05	3.67	3.41	4.07	7.30	3.90*
GC									
Factors of competence									
	15.05	14.68	42.43	5.92*	14.34	14.74	15.28	9.09	1.27
EXR	7.72	7.46	5.63	3.18	7.50	7.37	7.82	6.43	3.64*
OEX									
Other relevant variables									
	8.58	7.68	55.39	8.48**	7.94	8.04	7.97	0.15	0.02
QBR	17.69	13.26	1259.35	10.11**	13.73	16.33	16.37	195.89	1.57
S									

(table continues)

Table 35 (continued)

Variables	Ownership			Hierarchical levels				
	Private M	Public M	MS	F-(1,284)	Low M	Middle M	High M	F-(2,284)
Other relevant variables								
WC	15.22	14.03	85.86	6.26*	14.31	14.61	14.37	2.33
AO	10.29	9.47	43.92	7.58**	9.56	9.78	9.92	4.37
ER	20.74	18.60	291.36	11.69**	19.20	18.85	19.99	24.40
SV	9.70	8.85	47.67	9.16**	9.25	9.08	9.09	0.15
SEF(WE)	10.41	9.23	88.98	14.42**	9.31	9.58	10.05	13.58
SCP	10.36	3.65	185.90	36.17**	9.01	9.28	9.67	10.52
IJS	6.69	6.13	19.71	7.22**	6.21	6.21	6.58	2.99
OE	12.69	11.40	161.25	17.10**	12.09	11.51	12.22	13.02

*p < .05. **p < .01.

public organizations ($\underline{M} = 5.07$).

Results in the case of Job Involvement showed that both the main effects were significant. This meant that the respondents, on an average, showed differential magnitudes of Job Involvement across the variables ownership and hierarchical level. Specifically, the respondents in public organizations showed more ($\underline{M} = 6.27$) Job Involvement than their private organizations counterparts ($\underline{M} = 5.78$, $F_{(1,284)} = 3.89$, $p \leq .05$). The cell means across hierarchical level revealed that the top level respondents showed significantly greater ($F_{(2,284)} = 6.78$, $p \leq .01$) Job Involvement ($\underline{M} = 6.68$) than the low hierarchy level respondents ($\underline{M} = 5.66$ (Newman Keul's Method, cited in Winer, 1962, p. 80)).

ANOVA results for Generalized Competence showed that the main effect of hierarchical position was significant ($F_{(2,284)} = 3.90$, $p \leq .05$). The cell means revealed that role incumbents high in hierarchy level showed more Generalized Competence ($M = 4.07$) than their low and middle level role incumbent counterparts ($\underline{M} = 3.67$, $\underline{M} = 3.67$).

Dimension(s) of excellence as a function of ownership and hierarchy level. Results for Excellence Recognition showed that the main effect of ownership was significant ($F_{(1,284)} = 5.92$, $p \leq .05$). This meant that respondents, on an average, showed differential magnitudes of Excellence Recognition

across the variable ownership. The executives in private organizations reported more Excellence Recognition ($\underline{M} = 15.05$), than their counterpart executives in public organizations ($\underline{M} = 14.68$).

Results for Output Excellence showed that the main effect of hierarchy level was significant ($\underline{F}(2,284) = 3.64$, $p \leq .05$). The cell means revealed that the role incumbents high in hierarchy level showed greater Output Excellence ($\underline{M} = 7.82$) than their counterpart role incumbents, middle in hierarchy level ($\underline{M} = 7.37$).

Other relevant antecedent and outcome variables as functions of ownership and hierarchy level. For the personal characteristic of Quiet, Bashful, and Reserved; the main effect of ownership was significant ($\underline{F}(1,284) = 8.48$, $p \leq .01$). The cell means revealed that the respondents in private organizations showed greater magnitudes of Quiet, Bashful, Reserved characteristics ($\underline{M} = 8.58$) than their public organizations' counterparts ($\underline{M} = 7.68$).

ANOVA results for the factor Seniority showed that the main effect of ownership was significant ($\underline{F}(1,284) = 10.11$, $p \leq .01$). The cell means revealed that the respondents in private organizations were relatively more senior ($\underline{M} = 17.69$) than their public organizations' counterparts ($\underline{M} = 13.26$).

In case of Constraint of Change, both the main effects were insignificant (Table 36) but the interaction effect of ownership x hierarchy was significant ($F_{(2,284)} = 8.43$, $p \leq .01$). Internal comparison among the cell means of interaction showed (Figure 2) that the respondents who were high in hierarchy level and in public organizations on an average reported experiencing more Constraint of Change ($M = 6.03$) than the respondents belonging to the high hierarchy level in private organizations ($M = 4.44$).

Results for the variable Wholistic Concern showed that the main effect of ownership was significant ($F_{(1,284)} = 6.26$, $p \leq .05$). The cell means showed that the respondents in private organizations reported having more Wholistic Concern ($M = 15.22$) than their counterparts in public organizations ($M = 14.03$).

For Advancement Opportunity the main effect of ownership was significant ($F_{(1,284)} = 7.58$, $p \leq .01$). The cell means showed that the respondents in private organization had greater Advancement Opportunities ($M = 10.29$) than their counterparts in public organizations ($M = 9.47$).

For the variable Expertise Recognition, the main effect of ownership was significant ($F_{(1,284)} = 11.69$) $p \leq .01$). This meant that the respondents showed differential magnitude of Expertise Recognition across the variable ownership. The cell means across ownership showed that the respondents

Table 36

Analysis of Variance Result for Constraint of Change as a
Function of Ownership x Hierarchy levels.

Ownership	Hierarching levels			<u>MS</u>	<u>F</u> (2,284)
	Low(b_1)	Middle(b_2)	High(b_3)		
Private (a_1)	5.61	5.50	4.45	36.31	8.43**
Public (a_2)	5.06	4.81	6.03		

** $p \leq .01$.

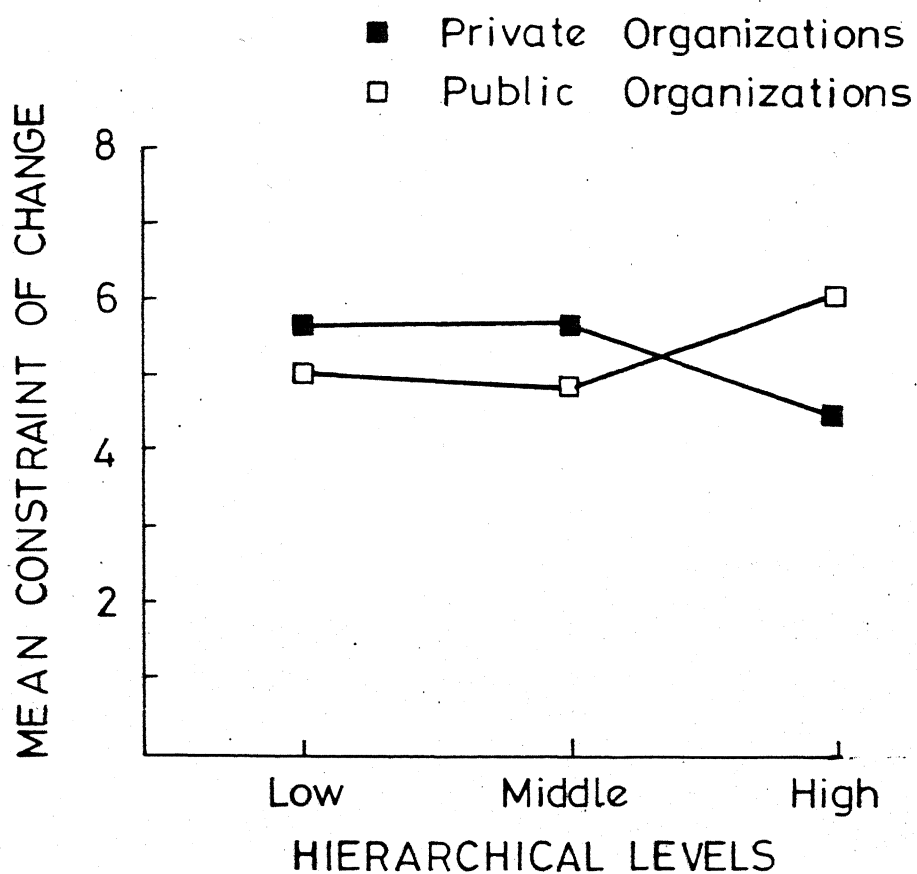


Figure 2. Mean constraint of change as a function of organizational ownership and hierarchical levels of the role incumbents.

in private organizations reported greater Expertise Recognition ($\underline{M} = 20.74$) than their counterparts in public organizations ($\underline{M} = 18.60$).

Results for Skills Variety showed that the main effect of ownership was significant ($\underline{F}_{(1,284)} = 9.16, p \leq .01$). The cell means revealed that respondents in private organizations had greater Skills Variety ($\underline{M} = 9.70$), than their public organization counterparts ($\underline{M} = 8.85$).

For Stimulation, Encouragement, and Feedback (in Work Environment); the main effect of ownership was significant ($\underline{F}_{(1,284)} = 14.42, p \leq .01$). The cell means revealed that the respondents in private organization reported greater amount ($\underline{M} = 10.41$) of Stimulation, Encouragement, and Feedback (in Work Environment); than the respondents in public organizations ($\underline{M} = 9.23$).

Results for the factor Satisfaction with Company Policies showed that the main effect of ownership was significant ($\underline{F}_{(1,284)} = 36.17, p \leq .01$). This meant that the respondents, on an average, showed differential magnitudes of satisfaction with Company Policies. The cell means across ownership revealed that the respondents in private organizations showed greater satisfaction ($\underline{M} = 10.36$) than their counterparts in public organizations ($\underline{M} = 8.65$).

Results for the variables Intrinsic Job Satisfaction showed that the main effect of ownership was significant

($F_{(1,284)} = 7.22, p \leq .01$). The cell means revealed that the respondents in private organizations showed greater Intrinsic Job Satisfaction ($M = 6.69$) than their counterparts in public organizations ($M = 6.13$).

ANOVA results for Organizational Effectiveness showed that the main effect of ownership was significant ($F_{(1,284)} = 17.10, p \leq .01$). The cell means revealed that respondents in private organizations reported their organizations to be higher on this variable ($M = 12.96$) than their counterparts in public organizations ($M = 11.40$).

Question 10

What are the patterns of relationships of the dimensions of competence and creativity with the personal outcomes such as personal effectiveness, excellence, and job satisfaction?

Table 37 presents the results of canonical correlation analysis in which factors of creativity and competence were related to the personal outcome variables. Two CCs out of possible seven turned out to be significant.

The first CC results ($R_c = 0.71, R_c^2 = 0.51, \chi^2_{(112)} = 347.73, p \leq .01$) showed that the dimensions of creativity and competence were significantly related to the personal outcome variables. The two sets of variables mutually shared 51 per cent of the variance. The redundancy index (0.2692) for the factors of personal outcomes showed that

Table 37

Canonical Correlation Showing Relationship of the Dimensions
of Creativity and Competence with Personal Outcomes

Variables	Set 1	Set 2
	Loadings	Loadings
Left hand set		
CA	1.00	- 0.02
AAPS	0.53	- 0.15
II	0.40	0.06
OAPS	0.71	- 0.02
NCI	0.25	- 0.03
ASAPS	0.88	0.03
SAPS	0.65	0.07
ANAPS	0.49	0.07
CT	0.87	0.21
FA	0.12	0.32
EM	0.52	0.28
JI	- 0.04	0.66
PTR	0.96	0.11
WIC	0.01	0.27
GC	0.67	- 0.04
SC	0.12	- 0.24

(table continues)

Table 37 (continued)

	Set 1	Set 2
Variables	Loadings	Loadings
Right hand set		
PE	1.00	- 0.13
QCEE	0.92	- 0.03
EXR	0.79	0.22
OEX	0.98	- 0.01
SCP	0.24	0.46
IJS	0.31	0.74
SJSHO	0.16	0.09
<hr/>		
<u>Rc</u>	0.71	0.45
<u>Rc</u> ²	0.51	0.20
Chi-square	347.73	150.98
<u>df</u>	112	90
<u>p</u>	≤ 0.01	≤ 0.01
Variance <u>LHS</u>	0.3803	0.0525
Redundancy <u>LHS</u>	0.1929	0.0104
Variance <u>RHS</u>	0.5308	0.1185
Redundancy <u>RHS</u>	0.2692	0.0235

0.2692 out of total variance (0.5308) in the right hand variate was shared with the left hand variate. The left hand variate could be thought of as loaded positively with Creative Abilities, Analytical Approach to Problem solving, Incubation and Illumination, Optimizing Approach to Problem solving, Associative Approach to Problem solving, Synthesizing Approach to Problem solving, Competence Thema, Environment Mastery, Personal Target Realization, and Generalized Competence. This variate was related to the right hand variate that was loaded positively with Personal Effectiveness, Quality Conscious Entrepreneurial Excellence, Excellence Recognition, Output Excellence, and Intrinsic Job Satisfaction.

The second CC result ($R_c = 0.45$, $R_c^2 = 0.20$, $\chi^2_{(90)} = 150.98$, $p \leq .01$) showed that some of the dimensions of creativity and competence were significantly related to the personal outcome variables and both the sets mutually shared a variance of 20 per cent. The redundancy index (0.0235) for the personal outcome variables showed that 0.0235 out of total variance (0.1185) was shared with the left hand variate that was loaded positively with Feedback and Accomplishment; and Job Involvement. This variate was related to the right hand variate that was loaded positively with Satisfaction with Company Policies and Intrinsic Job Satisfaction.

Question 11

What are the interrelationships of personal, organizational, and person's environmental forces' variables with personal outcome variables?

Table 38 presents the results of canonical correlation analysis in which personal, organizational, and person's environmental forces' variables were related to the personal outcome variables. Four CCs out of possible seven turned out to be significant.

The first CC results ($R_c = 0.80$, $R_c^2 = 0.64$, $X^2_{(364)} = 813.72$, $p \leq .01$) showed that left hand set (composed of personal, organizational, and person's environmental forces' variables) was related significantly to the right hand variate (composed of personal outcome variables). The two sets of variables mutually shared 64 per cent of the variance. The Rdx for right set (0.4228) showed that 0.4228 out of total variance (0.6651) in the right set of variables was shared with the left hand variate. The left hand variate could be thought to be loaded positively with personal variables such as Internal Locus of Control, Self-esteem, Intrinsic Motivation, Creative Abilities, Competence Thema, Environment Mastery, Personal Target Realization, Generalized Competence, Need for Self-actualization, Analytical Approach to Problem solving; Incubation and Illumination; Optimizing Approach to Problem solving,

Table 38

Canonical Correlation Showing Relationship of Personal
Organizational, and Person's Environmental Forces'
Variables with Personal Outcomes

	Set 1	Set 2	Set 3	Set 4
Variables	Loadings	Loadings	Loadings	Loadings
Left hand set				
ILC	0.92	- 0.16	- 0.08	0.10
SE	0.51	- 0.23	- 0.00	0.03
IM	0.69	- 0.24	- 0.02	0.08
CA	0.99	- 0.26	0.00	- 0.06
CT	0.84	- 0.07	0.07	0.06
FA	0.15	0.10	0.16	- 0.09
EM	0.48	- 0.10	0.23	- 0.04
JI	0.11	0.42	0.21	0.01
PTR	0.91	- 0.10	0.01	- 0.05
WIC	0.12	0.32	- 0.03	0.15
GC	0.62	- 0.15	- 0.06	0.07
SC	0.06	- 0.16	- 0.11	- 0.03
NSA	0.64	- 0.33	- 0.04	- 0.09
AAPS	0.43	- 0.21	- 0.04	0.00
II	0.36	- 0.08	0.03	- 0.07
OAPS	0.64	- 0.18	0.03	0.08

(table continues)

Table 38 (continued)

	Set 1	Set 2	Set 3	Set 4
Variables	Loadings	Loadings	Loadings	Loadings
NCI	0.17	- 0.20	0.09	- 0.23
ASAPS	0.80	- 0.20	0.01	- 0.12
SAPS	0.56	- 0.18	0.09	- 0.01
ANAPS	0.44	- 0.10	0.03	- 0.27
DPS	0.68	- 0.36	- 0.11	- 0.10
QBR	0.12	- 0.15	0.07	- 0.02
CPA	0.60	- 0.39	0.06	0.04
OWAJ	0.48	- 0.04	0.03	0.24
S	0.15	0.20	0.09	0.02
PI	0.64	- 0.29	0.06	- 0.02
PD	0.42	- 0.26	0.02	- 0.17
TS	0.72	0.07	0.04	- 0.10
RCL	0.80	0.12	0.12	- 0.02
TC	- 0.03	- 0.13	- 0.01	- 0.02
CTC	0.05	- 0.13	0.07	0.06
NPLS	0.38	0.57	0.08	- 0.24
TY	0.60	0.09	- 0.05	- 0.11
WC	0.57	0.53	- 0.02	- 0.08
IWM	0.43	0.17	- 0.12	- 0.25
AO	0.69	0.51	0.12	- 0.06
TI	0.83	- 0.08	0.03	- 0.14

(table continues)

Table 38 (continued)

	Set 1	Set 2	Set 3	Set 4
Variables	Loadings	Loadings	Loadings	Loadings
ETR	0.59	0.79	- 0.10	- 0.05
D	0.01	0.45	0.11	0.08
AS	- 0.21	0.38	- 0.02	0.01
SV	0.61	0.38	0.13	- 0.16
FO (PPE)	0.36	- 0.01	0.04	- 0.10
SEF (WE)	0.56	0.46	0.13	0.10
EPCI (PPE & PE)	0.32	- 0.15	- 0.08	- 0.07
IV (PPE)	0.38	- 0.12	- 0.06	- 0.14
EF (EWE)	0.29	- 0.15	0.01	- 0.19
ARO (EWE & CE)	0.20	- 0.01	- 0.14	- 0.18
FBA (EWE)	0.28	- 0.12	- 0.06	- 0.17
PSP (PE)	0.11	- 0.02	0.06	- 0.00
FDT (PE)	0.43	- 0.11	0.06	- 0.10
SC (EWE)	0.45	- 0.15	0.03	- 0.31
IV (PE)	0.56	- 0.08	0.07	- 0.14
Right hand set				
PE	1.00	- 0.29	- 0.16	- 0.04
QCEE	0.87	- 0.25	- 0.03	- 0.49
EXR	0.89	- 0.14	0.17	0.27
OEX	1.00	- 0.12	0.04	0.18
SCP	0.57	0.95	- 0.19	0.05

(table continues)

Table 38 (continued)

	Set 1	Set 2	Set 3	Set 4
Variables	Loadings	Loadings	Loadings	Loadings
IJS	0.61	0.69	0.38	- 0.24
SJSHO	0.42	- 0.46	- 0.19	- 0.29
<u>Rc</u>	0.80	0.74	0.59	0.51
<u>Rc</u> ²	0.64	0.54	0.35	0.26
Chi-square	813.72	551.23	347.74	236.26
<u>df</u>	364	306	250	196
<u>p</u>	≠ 0.01	≠ 0.01	≠ 0.01	≠ 0.05
Variance <u>LHS</u>	0.2777	0.0727	0.0072	0.0155
Redundancy <u>LHS</u>	0.1765	0.0394	0.0025	0.0041
Variance <u>RHS</u>	0.6651	0.2519	0.0388	0.0702
Redundancy <u>RHS</u>	0.4228	0.1367	0.0135	0.0184

Associative Approach to Problem solving , Synthesizing
 Approach to Problem solving, Analogical Approach to Problem
 solving; Determined, Persistent, and Self-starter; Courteous,
 Popular, and Altruistic; Obedient, Willing to Accept
 Judgements; Passion for Innovation, Passion for
 Distinctiveness; Organizational variables including Task
 Structure, Role Clarity, Nurturant Participative Leadership
 Style, Theory Y, Wholistic Concern, Informal Work Mechanism,
 Advancement Opportunity, Task Identity, Expertise Recognition,
 Skills variety, and person's environmental forces' variables
 such as Feedback and Opportunity (in Preprofessional
 Environment); Stimulation, Encouragement, and Feedback
 (in Work Environment); Esteem for Pioneers, Creators and
 Innovators (in Preprofessional and Professional Environment);
 Innovation Values (in Preprofessional Environment); Freedom
 for Divergent Thought (in Professional Environment),
 Stimulation for Creativity (an Extra-work Environment); and
 Innovation Values (in Professional Environment). This
 canonical variate was related significantly to the right
 hand variate that was loaded positively with personal
 Effectiveness, Quality Conscious Entrepreneurial Excellence,
 Excellence Recognition, Output Excellence, Satisfaction
 with Company Policies, Intrinsic Job Satisfaction; and
 Satisfaction with Job Security and Helping others.

The second CC results ($R_c = 0.70$, $R_c^2 = 0.54$, $X^2_{(306)} = 551.23$, $p \leq .01$) showed that the two sets of variables were related significantly and shared a variance of 54 per cent. The redundancy index for right hand variate (0.1367) showed that 0.1367 out of total variance (0.2519) in the right hand variate was shared with the left hand variate. The left hand variate could be thought to be loaded positively with personal variables such as Job Involvement; Work Inclination and Control; organizational variables such as Nurturant Participative Leadership Style, Wholistic Concern, Advancement Opportunity, Expertise Recognition, Decentralization, Autonomy in Supervision, Skills Variety; and Stimulation, Encouragement and Feedback (in Work Environment); a factor of person's environmental forces, but loaded negatively with Need for Self-actualization; Determined, Persistent, and Self-starter; and Courteous, Popular, and Altruistic (personal variables). This canonical variate was significantly related to the right hand variate that was loaded positively with Satisfaction with Company Policies, Intrinsic Job Satisfaction; and Satisfaction with Job Security and Helping Others.

The third CC though significant, did not have loadings equal to or greater than 0.30. Therefore it would be reported in the table, but would not be described.

The fourth CC results ($R_c = 0.51$, $R_c^2 = 0.26$, $X^2_{(196)} = 236.26$, $p \leq .01$) showed that the two sets of variables were significantly related and shared a variance of 26 per cent. The redundancy index for the right hand variate (0.0184) showed that 0.0184 out of total variance (0.0702) in the right hand variate was shared with the left hand variate. The left hand variate could be thought to be loaded negatively with Stimulation for Creativity (in Extrawork Environment). The right hand variate could be thought to be loaded negatively with Quality Conscious Entrepreneurial Excellence.

Question 12

What is the strength of association of the personal outcome variables taken individually as the criterion with personal, organizational, and person's environmental forces' variables as the predictors?

In conceptual framework of this research, the personal outcomes occupy a signal position. These could be taken as the criteria against which all other variable in the framework could be evaluated. Considering the fact that personal outcomes is a global label of several components of personal outcome variable, and that regression may

sometimes contain a bit more of information, it was considered useful to examine the strength of association of the individual components of the personal outcomes with all the other "antecedent" variables. Therefore corresponding to the seven components of personal outcomes, seven multiple regression equations were computed with each of the components as the criterion and other "antecedent" variables as the predictors. It is acknowledged that such an analysis after canonical correlation analysis may be redundant to a large extent, nevertheless, since sometimes individual variables as criterion may be in the focus of attention, such multiple regression analyses were done as additional inputs for understanding of the "antecedents" of the personal outcomes in a better way. The results of multiple regression analysis with each of the components of personal outcomes as criterion and other variables as predictors follow.

In most multiple regression analyses (MRA), a stepwise multiple regression analysis was performed using "all" possible variables in the predictor set. However, in stepwise regression process, usually a step may be identified after which addition of subsequent variables adds but less than one per cent of variance predicted. Considering the expensive nature of such addition of variables, it was decided to drop such variables that add less than one

per cent of variance from the equation. Finally, a regression equation consisting of less number of variables, heretoeafter referred to as the short listed regression equation would be reported in all the MRA results, thus, elementary information would be given for the "total" regression equation and detailed information would be provided for the short listed regression equations in all subsequent MRA results and discussions.

There is a tendency in multiple \underline{R} coefficients computed from a sample to tend to be somewhat inflated with respect to the population \underline{R} due to the accumulation of chance errors which may pile up since \underline{R} is always taken as positive. An obtained \underline{R} can be "corrected, adjusted, or shrunken" to give a better measure of the population \underline{R}^2 by using the following formula.

$$\underline{\underline{R}}^2_c = 1 - ((1 - R^2) \left(\frac{N - 1}{N - K - 1} \right))$$

Where

$$\underline{\underline{R}}^2_c = \text{adjusted } \underline{R}^2$$

\underline{N} = size of the sample

\underline{K} = number of predictor variables

In all the multiple regression analyses results reported herein, unadjusted \underline{R}^2 values have been reported. However, adjusted \underline{R} or \underline{R}^2 values may readily be obtained by using the above formula should they be required. It

would be noted that the adjusted R^2 values may undergo considerable change when N is small, K is large, or R is small. In the present study, especially in case of the "short listed" regression equations, these conditions seldom arise. Therefore, the adjusted values are less likely to be drastically different from those obtained.

Predicting personal effectiveness by personal, organizational, and person's environmental forces' variables.

Results of MRA in which Personal Effectiveness was the criterion and personal, organizational, and environmental forces' variables were the predictors, showed that overall regression was significant ($F_{(50,239)} = 4.28, p \leq .01$). Out of the 52 predictor variables, two (Personal Target Realization and Role Clarity) could not be included due to F - level or tolerance level being insufficient for further computation. The fifty variables entered stepwise into the regression equation explained 50 per cent of variance in the criterion variable. A short listed regression equation consisting of ten predictors explaining 41 per cent variance was retained. Results based on these ten variables (Table 39) showed that overall regression was significant ($F_{(10,279)} = 19.68, p \leq .01$). All the individual variables except Need for Self-actualization were individually significant predictors at $p \leq .05$. Out of the significant predictors, Self-esteem and Analytical Approach to Problem

Table 39

Multiple Regression Analysis Results Incorporating Personal,
Organizational and Person's Environmental Forces as Predictors,
and Personal Effectiveness as the Criterion

Variables	<u>r</u>	beta	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (1,279)
CA	.46	.18	.46	.21	.09	.04	7.55**
ILC	.42	.17	.53	.28	.30	.09	10.44**
GC	.31	.20	.56	.31	.32	.08	16.91**
DPS	.44	.18	.59	.35	.20	.06	9.30**
TI	.40	.15	.61	.37	.22	.08	7.44**
SC	.12	.13	.62	.38	.25	.09	7.27**
ASAPS	.38	.16	.63	.39	.17	.06	7.36**
AAPS	.13	-.10	.63	.40	-.14	.07	4.21*
SE	.26	-.13	.64	.41	-.16	.07	5.15*
NSA	.33	.09	.64	.42	.08	.05	2.76 ^{ns}
Constant					5.22		

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Regression	602.98	10	60.30	19.68	\leq .01
Residual	859.40	279	3.08		

ns = not significant at $p \leq .05$. * $p \leq .05$. ** $p \leq .01$.

solving were the negative predictors of Personal Effectiveness meaning that, other things being constant, the magnitudes of these variables should be relatively low in order to have higher Personal Effectiveness. Out of the remaining positive predictors, the variables could be interpreted as having their respective strengths of association in the following order. Generalized Competence, Creative Abilities; Determined, Persistent, and Self-starter; Associative Approach to Problem solving, Internal Locus of Control, Task Identity, and Specific Competence.

Predicting quality conscious entrepreneurial excellence by personal, organizational, and person's environmental forces' variables. A multiple regression analysis was performed taking Quality Conscious Entrepreneurial Excellence as the criterion and personal, organizational, and environmental forces' variables as predictors. The result showed that overall regression was significant ($F_{(48,241)} = 3.26, p \leq .01$). Out of the 52 predictor variables four (Internal Locus of Control, Intrinsic Motivation, Theory Y, and Freedom for Divergent Thought (in Professional Environment)) could not be included due to F - level or tolerance level being insufficient for further computation. Forty eight variables entered stepwise into the regression equation explained 39 per cent of variance in the criterion variable. A regression equation consisting of eleven predictors and

explaining 33 per cent of variance was retained. Results based on these eleven variables (Table 40) showed the overall regression was significant ($F_{(11,278)} = 12.35$, $p \leq .01$). All the individual variables except four (Optimizing Approach to Problem solving, Nurturant Participative Leadership Style; Feedback and Accomplishment; and Decentralization) were individually significant predictors at $p \leq .05$. Out of the remaining positive predictors the variables could be interpreted as having their respective strength of association in the following order. Creative Abilities, Need for Self-actualization, Stimulation for Creativity (in Extrawork Environment), Generalized Competence, Analogical Approach to Problem solving, Synthesizing Approach to Problem solving, and Informal Work Mechanism. It would mean that, other things being constant, these variables should be relatively high in order to have higher Quality Conscious Entrepreneurial Excellence.

Predicting excellence recognition by personal, organizational, and person's environmental forces' variables.

Results for the criterion variable Excellence Recognition showed that the overall regression was significant ($F_{(49,240)} = 3.18$, $p \leq .01$), explaining 39 per cent variance in the criterion variable. Out of 52 predictor variables, three (Seniority, Nurturant Participative Leadership Style, and Task Identity) could not be included due to F - level or

Table 40

Multiple Regression Analysis Results Incorporating Personal, Organizational, and Person's Environmental Forces as Predictors, and Quality Conscious Entrepreneurial Excellence as the Criterion

Variables	<u>r</u>	beta	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (1,278)
CA	.42	.19	.42	.17	.09	.03	8.13**
SC(EWE)	.31	.16	.45	.21	.09	.03	9.60**
IWM	.26	.11	.49	.24	.13	.06	4.53*
GC	.19	.15	.51	.26	.21	.07	8.86**
NSA	.29	.17	.52	.27	.13	.04	9.28**
ANAPS	.30	.14	.54	.29	.15	.07	5.21*
SAPS	.28	.13	.55	.30	.14	.06	4.52*
OAPS	.21	-.11	.56	.31	-.08	.04	3.32 ^{ns}
NPLS	.18	.10	.56	.32	.01	.01	3.78 ^{ns}
FA	.07	.09	.57	.32	.09	.05	3.06 ^{ns}
D	-.14	-.08	.57	.33	-.04	-.02	3.68 ^{ns}
Constant					2.20		

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Regression	346.88	11	31.53	12.35	$\leq .01$
Residual	709.55	278	2.55		

ns = not significant at $p \leq .05$. * $p \leq .05$. ** $p \leq .01$.

tolerance level being insufficient for further computation. The short listed regression equation consisted of ten variables. Overall regression was significant ($F_{(10,279)} = 13.32, p \leq .01$) and explained 32 per cent variance in the criterion (Table 41). All the individual variables (except Job Involvement, Penalty for Shabby performance; and Determined, Persistent, and Self-starter) were significant. Out of the significant predictors Nonconventional Ideation was the negative predictor. Remaining positive significant predictors could be interpreted as having their respective strength of association in the following order. Internal Locus of Control; Courteous, Popular, and Altruistic; Obedient, Willing to Accept Judgements; Generalized Competence, Associative Approach to Problem solving, and Environment Mastery.

Predicting output excellence by personal, organizational, and person's invironmental forces' variables. Results of MRA with Output Excellence as the criterion showed that the overall regression consisting of fifty variables was significant ($F_{(50,239)} = 3.33, p \leq .01$) and explained a total of 41 per cent variance in the criterion variable. The variables Specific Competence and Innovation Values missing could not be included in the regression equation due to the F - level being insufficient for further computation. Table 42 shows that the short listed regression

Table 41

Multiple Regression Analysis Results Incorporating Personal,
Organizational, and Person's Environmental Forces as
Predictors, and Excellence Recognition as the Criterion

Variables	<u>r</u>	beta	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (1,279)
ILC	.39	.25	.39	.15	.52	.12	19.32**
CPA	.34	.22	.46	.21	.28	.07	15.66**
GC	.26	.17	.49	.24	.33	.10	10.78**
OWAJ	.25	.19	.51	.26	.37	.10	13.40**
NCI	- .03	- .15	.53	.28	- .24	.09	8.03**
ASAPS	.25	.14	.54	.29	.17	.07	5.37*
EM	.21	.11	.55	.30	.15	.07	4.22*
JI	.07	.10	.56	.31	.14	.07	2.77 ^{ns}
PSP (PE)	.05	.09	.56	.32	.12	.07	3.09 ^{ns}
DPS	.17	- .10	.57	.33	- .14	.08	2.83 ^{ns}
Constant					2.99		

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Regression	677.81	10	67.78	13.32	\leq .01
Residual	1420.20	279	5.09		

ns = not significant at $p \leq .05$. * $p \leq .05$. ** $p \leq .01$.

Table 42

Multiple Regression Analysis Results Incorporating Personal, Organizational, and Person's Environmental Forces as Predictors, and Output Excellence as the Criterion

Variables	<u>r</u>	beta	<u>R</u>	R^2	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (1,280)
CA	.45	.29	.45	.20	.09	.02	21.04**
TI	.35	.17	.48	.23	.14	.05	9.36**
ILC	.34	.10	.50	.25	.10	.06	3.16 ^{ns}
OWAJ	.23	.08	.52	.27	.08	.05	2.26 ^{ns}
NCI	.04	-.17	.54	.29	.13	.04	9.99**
QBR	.13	.15	.55	.31	.07	.03	7.99**
GC	.22	.11	.56	.32	.11	.05	4.94*
CT	.35	.10	.57	.33	.04	.02	3.10 ^{ns}
WC	.20	.09	.58	.33	.03	.02	2.88 ^{ns}
Constant					1.49		

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Regression	172.75	9	19.19	15.48	$\leq .01$
Residual	347.07	280	1.23		

ns = not significant at $p \leq .05$.

* $p \leq .05$. ** $p \leq .01$.

equation consisting of nine variables, was significant ($F_{(9,280)} = 15.48, p \leq .01$) and explained 33 per cent variance in the criterion variable. All the individual variables (except Internal Locus of Control; Obedient, Willing to Accept Judgements; Competence Thema, and Wholistic Concern) were significant. Out of the significant predictors, Nonconventional Ideation was the negative predictor. Remaining positive predictors could be interpreted as having their strength of association in the following order Creative Abilities, Task Identity; Quiet, Bashful, and Reserved; and Generalized Competence.

Predicting satisfaction with company policies by personal organizational, and person's environmental forces' variables.

MRA results taking satisfaction with Company Policies as criterion showed that overall regression was significant ($F_{(51,238)} = 5.06, p \leq .01$) and explained 52 per cent variance in the criterion variable. Out of 52 predictor variables, Obedient Willing to Accept Judgements; could not be included in the regression equation due to F - level being insufficient for further computation. Table 43 shows that short listed regression equation consisting of twelve variables was significant ($F_{(12,277)} = 20.99, p \leq .01$) and explained 48 per cent variance. All the individual variables (except Competence Thema, Creative Abilities, and Job Involvement) were significant. Out of the significant

Table 43

Multiple Regression Analysis Results Incorporating Personal,
Organizational, and Person's Environmental Forces as Predictors,
and Satisfaction with Company Policies as the Criterion

Variables	<u>r</u>	beta	<u>R</u>	R^2	<u>b</u>	Std. error of <u>b</u>	$F(1,277)$
TR	.60	.55	.60	.36	.26	.02	119.66**
IC	.21	.10	.62	.38	.14	.06	4.54*
PA	-.09	-.16	.63	.40	-.18	.06	9.53**
O	.39	.12	.64	.41	.12	.05	5.70*
BR	-.10	-.11	.65	.43	-.10	.04	5.41*
RO (EWE & CE)	.09	.12	.66	.44	.12	.04	6.79**
CI	-.09	-.12	.67	.45	-.17	.07	5.92*
T	.14	.08	.67	.45	.05	.03	2.13 ^{ns}
A	.06	-.11	.68	.46	.14	.06	5.38*
L	-.02	-.11	.68	.47	-.09	.04	4.59*
A	.08	.11	.69	.47	.07	.04	3.76 ^{ns}
I	.22	.08	.69	.48	.10	.06	2.84 ^{ns}
Constant		4.04					

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Regression	806.21	12	67.18	20.99	$\leq .01$
Residual	886.77	277	3.20		

= not significant at $p \leq .05$. * $p \leq .05$. ** $p \leq .01$.

predictors Courteous, Popular, and Altruistic; Quiet, Bashful, and Reserved; Nonconventional Ideation; Feedback and Accomplishment; and Passion for Innovation were the negative predictors. Remaining positive predictors could be interpreted as having their strength of association in the following order. Expertise Recognition; Autonomy and Result Orientation (in Extrawork and Childhood Environment); Advancement Opportunity; and Work Inclination and Control.

Predicting intrinsic job satisfaction by personal, organizational, and person's environmental forces' variables.

MRA results for the criterion variable Intrinsic Job Satisfaction showed that the overall regression was significant ($F_{(47,242)} = 4.26, p \leq .01$), and explained 45 per cent variance in the criterion variable. The variables Generalized Competence, Task Structure, Informal Work Mechanism; Stimulation, Encouragement, and Feedback (in Work Environment); and Innovation Values (in Preprofessional Environment) could not be included in the regression equation due to F - level being insufficient for further computation. A short listed regression (Table 44) equation consisting of twelve variables was significant ($F_{(12,277)} = 15.17, p \leq .01$), and explained 40 per cent variance. All the individual variables, except Stimulation for Creativity (in Extrawork Environment); Courteous, Popular, and Altruistic; Incubation and Illumination; Constraint of

Table 44

Multiple Regression Analysis Results Incorporating Personal,
Organizational, and Person's Environmental Forces as Predictors,
and Intrinsic Job Satisfaction as the Criterion

Variables	<u>r</u>	<u>beta</u>	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (1,277)
AO	.45	.27	.45	.20	.19	.04	23.52**
SV	.39	.26	.52	.27	.19	.04	25.25**
JI	.27	.23	.56	.32	.20	.04	21.50**
D	.25	.14	.57	.33	.05	.02	7.66**
EM	.17	.13	.59	.34	.11	.04	7.24**
AAPS	-.04	-.10	.60	.35	-.10	.05	4.24*
RCL	.30	.13	.60	.36	.09	.04	5.27*
SC	-.07	-.10	.61	.37	-.14	.07	4.10*
SC(EWE)	.10	.09	.62	.38	.04	.02	3.23 ^{ns}
CPA	-.02	-.08	.62	.39	-.06	.04	2.52 ^{ns}
II	.05	-.09	.62	.39	-.09	.05	2.89 ^{ns}
CTC	-.02	.08	.63	.40	.06	.04	2.76 ^{ns}
Constant				0.62			

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Regression	320.14	12	26.68	15.17	\bar{p} .01
Residual	487.03	277	1.76		

ns = not significant at $\bar{p} \bar{r}$.05. * $\bar{p} \bar{r}$.05. ** $\bar{p} \bar{r}$.01.

Change) were significant. Out of the significant predictors, Analytical Approach to Problem solving and Specific Competence were the negative predictors. Remaining positive predictors could be interpreted as having their strength of association in the following order. Advancement Opportunity, Skills Variety, Job Involvement, Decentralization, Environment Mastery and Role Clarity.

Predicting satisfaction with job security and helping others by personal, organizational, and person's environmental forces' variables. MRA for Satisfaction with Job Security and Helping Others showed that the overall regression was significant ($F_{(46,243)} = 2.30, p \leq .01$) and explained 30 per cent variance in the criterion variable. Out of 52 predictors Competence Thema, Specific Competence, Optimizing Approach to Problem solving; Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment); Innovation Values (in Preprofessional Environment); and Freedom of Belief and Action (in Extrawork Environment) could not be included into the regression equation due to F - level being insufficient for further computation. A short listed regression equation (Table 45) consisting of twelve variables was significant ($F_{(12,277)} = 7.14, p \leq .01$) and explained 24 per cent variance. All the individual variables (except Skills Variety, Synthesizing Approach to Problem solving, Stimulation for Creativity

Table 45

Multiple Regression Analysis Results Incorporating Personal, Organizational, and Person's Environmental Forces as Predictors, and Satisfaction with Job Security and Helping Others as the Criterion

Variables	<u>r</u>	beta	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (1,277)
ETR	.31	.19	.31	.10	.06	.02	7.36**
AO	.28	.27	.34	.12	.17	.04	17.06**
SEF (WE)	.07	-.20	.37	.14	-.12	.04	9.50**
IWM	.20	.16	.39	.15	.15	.05	7.99**
NCI	-.07	-.16	.41	.17	-.15	.05	7.70**
IM	-.02	-.19	.43	.18	-.11	.04	8.05**
NSA	.08	.16	.44	.20	.10	.04	6.50*
SV	.22	.12	.45	.21	.08	.04	3.12 ^{ns}
SAPS	-.04	-.11	.46	.21	-.10	.05	3.33 ^{ns}
SC (EWE)	.08	.11	.47	.22	.05	.02	3.75 ^{ns}
TC	.02	.11	.48	.23	.08	.04	3.93*
D	.16	.09	.49	.24	.03	.02	2.20 ^{ns}
Constant					4.01		

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Regression	158.56	12	13.21	7.14	$\leq .01$
	512.43	277	1.84		

ns = not significant at $p \leq .05$. * $p \leq .05$. ** $p \leq .01$.

(in Extrawork Environment), and Decentralization were significant. Out of the significant predictors, Stimulation, Encouragement, and Feedback (in Work Environment); Nonconventional Ideation, and Intrinsic Motivation were the negative predictors. Remaining positive predictors could be interpreted as having their strength of association in the following order. Advancement Opportunity, Expertise Recognition, Informal Work Mechanism, Need for Self-actualization, and Constraint of Time.

Organizational Effectiveness has been treated as a variable of importance in the literature pertaining to organizational behavior. Organizational Effectiveness can be seen as the culmination of the entire organizational dynamics that precede, and almost every component of structure and process of the organizational dynamics may be thought to be contributing either positively or negatively to the organizational effectiveness. Keeping these considerations in view, a pertinent research question could be the following.

Question 13

What is the strength of association of Organizational Effectiveness as the criterion and personal, organizational, and person's environmental forces' variables as the predictors?

A multiple regression analysis was computed with Organizational Effectiveness as Criterion and other variables as the predictors. The results showed that overall regression was significant ($F_{(49,240)} = 6.15, p \leq .01$) and explained a total of 56 per cent variance in the criterion variable. Out of 52 variables, Analogical Approach to Problem solving; Autonomy and Result Orientation (in Extrawork and Childhood Environment); and Innovation Values (in Professional Environment) could not be included into the regression equation due to the F - level being insufficient for the further computation. A short listed regression equation consisting of nine variables (Table 46) was significant ($F_{(9,280)} = 29.73, p \leq .01$) and explained 49 per cent variance. All the variables (except Task Identity, and Creative Abilities) were individually significant. Out of the significant predictors, Nonconventional Ideation and Personal Target Realization were the negative predictors. Remaining positive predictors could be interpreted as having their strength of association in the following order. Wholistic Concern, Expertise Recognition; Work Inclination and Control; Nurturant Participative Leadership Style, and Seniority.

While it is true that organizational Effectiveness could be related to the personal, organizational, and person's environmental forces' variables; it could also be

Table 46

Multiple Regression Analysis Results Incorporating Personal, Organizational, and Person's Environmental Forces as Predictors, and Organizational Effectiveness as the Criterion

Variables	<u>r</u>	beta	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (1,280)
ETR	.58	.29	.58	.33	.18	.04	23.77**
WC	.55	.32	.63	.40	.27	.05	30.85**
NCI	- .10	- .19	.66	.43	-.35	.09	16.26**
WIC	.23	.13	.67	.45	.22	.08	7.73**
S	.17	.11	.68	.46	.03	.01	6.18*
PTR	.03	- .18	.68	.47	-.29	.09	10.49**
TI	.16	.09	.69	.48	.18	.10	3.29 ^{ns}
NPLS	.46	.12	.69	.49	.02	.01	4.68*
CA	.09	.11	.70	.49	.09	.04	3.68 ^{ns}
Constant					2.96		

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Regression	1406.53	9	156.28	29.73	\bar{p} .01
Residual	1472.09	280	5.26		

ns = not significant at $\bar{p} \leq .05$.

* $\bar{p} \leq .05$. ** $\bar{p} \leq .01$.

interesting to examine as to what extent the personal factors, and organizational factors separately contribute to Organizational Effectiveness (person's environmental forces' variables might have something to do with Organizational Effectiveness but the effect would be mediated by personal factors). Therefore the next research question was the following.

Question 14

What is the strength of association of Organizational Effectiveness as the criterion and personal factors (only) as the predictors?

The results of multiple regression analysis showed that the overall regression was significant ($F_{(27,262)} = 2.68, p \leq .01$) and explained a total of 23 per cent variance in the criterion variable, that is, Organizational Effectiveness. A short listed regression (Table 47) equation was significant ($F_{(11,278)} = 5.75, p \leq .01$), and explained 19 per cent variance. All the individual variables (except Passion for Distinctiveness, Specific Competence, and Generalized Competence) were significant predictors of the criterion variable. Out of the significant predictors Nonconventional Ideation; and Courteous, Popular, and Altruistic; were the negative predictors. Remaining positive predictors could be interpreted as having their strength of relationship the following order; Work Inclination and Control;

Table 47

Multiple Regression Analysis Results Incorporating Personal Factors as Predictors, and Organizational Effectiveness as the Criterion.

Variables	<u>r</u>	beta	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (1,273)
WIC	.23	.21	.23	.05	.36	.10	12.48**
S	.17	.16	.30	.09	.04	.02	8.10**
JI	.20	.18	.33	.11	.29	.09	9.55**
SE	.11	.16	.35	.12	.27	.10	7.03**
PD	.07	.11	.37	.14	.19	.11	3.22 ^{ns}
NCI	- .10	- .14	.38	.14	- .26	.11	5.15*
ANAPS	.09	.13	.39	.15	.24	.11	4.52*
OWAJ	.11	.13	.40	.16	.29	.13	4.70*
CPA	- .03	- .12	.42	.17	- .18	.09	3.89*
SC	- .08	- .09	.42	.18	- .24	.15	2.50 ^{ns}
GC	- .02	- .07	.43	.19	- .17	.13	1.71 ^{ns}
Constant					3.93		

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Regression	533.31	11	48.48	5.75**
Residual	2345.31	278	8.44	

ns = not significant at $p \leq .05$. * $p \leq .05$. ** $p \leq .01$.

Job Involvement, Seniority, Self-esteem; Obedient, Willing to Accept Judgements; and Analogical Approach to Problem solving. As stated earlier, as a prologue to Question 14, another related question could be as follows.

Question 15

What is the strength of association of Organizational Effectiveness as the criterion and organizational factors (only) as the predictors?

A multiple regression analysis was performed with Organizational Effectiveness as the criterion and organizational variables as the predictor variables. Results showed that the overall regression was significant ($F_{(13,276)} = 16.16, p \leq .01$) and explained a total variance of 43 per cent. Out of the 14 predictor variables, Advancement Opportunity could not be included into the regression equation due to F - level or tolerance being insufficient for further computation. A short listed regression equation consisting of five predictors (Table 48) was significant ($F_{(5,284)} = 41.87, p \leq .01$) and explained 42 per cent variance in the criterion. All the individual variables (except Constraint of Change, and Theory Y) were significant. Remaining positive predictors could be interpreted as having their strength of association in the following order, Expertise Recognition, Wholistic Concern, and Autonomy in Supervision.

Table 48

Multiple Regression Analysis Results Incorporating Organizational Variables as Predictors, and Organizational Effectiveness as the Criterion

Variables	<u>r</u>	beta	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (1,284)
ETR	.58	.36	.58	.33	.22	.04	38.85**
WC	.55	.31	.63	.40	.26	.05	27.72**
CTC	-.13	-.09	.64	.41	-.13	.07	3.85 ^{ns}
AS	.13	.09	.65	.42	.17	.08	3.88*
TY	.28	.09	.65	.42	.09	.05	3.35 ^{ns}
Constant					2.34		

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Regression	1221.69	5	244.32	41.87	≤ .01
Residual	1657.02	284	5.83		

ns = not significant at $p \leq .05$.

* $p \leq .05$. ** $p \leq .01$.

Further Explorations

This study made use of a number of constructs or variables that had yielded a larger number of underlying dimensions upon factor analysis. A conceptual scheme was developed comprising five sectors consisting of (a) person's environmental forces, (b) organizational variables, (c) personal variables, (d) organizational outcome, and (e) personal outcomes (Figure 1, p. 125). The relationship among these five sectors were explored in the first instance. At the second step some research questions were sought to be answered that had been raised pertaining to the "major" constructs in the study, namely creativity, competence, and excellence. Thus fifteen (apart from the one describing factor analyses) research questions were identified and sought to be answered through various statistical techniques. All this was done on the basis of the conceptual scheme. However, experience has shown that the conceptual schemes many a time either are deceptively simplistic or inadequate to make use of the amount of information that may already be contained in the data pattern.

At this point the investigator wishes to make it clear that the approach behind the analysis reported so far should not be confused with the analyses that would follow. The analyses done heretofore represent the effort toward conceptualization whereas the analyses reported heretoeafter

represent the effort toward exploration. It should also be noted that conceptually independent constructs may in reality be related due to whatever reason. The explanation of the reason behind may not be adequately provided due to certain limitations. Nevertheless, it would certainly be worthwhile to explore the pattern of relationship in the data structure as it really exists irrespective of what was postulated. The analyses and description that follows would be an attempt in this direction.

Relationship of person's environmental forces and personal variables with personal outcomes. Table 49 shows the canonical correlation results in which person's environmental forces and personal variables were related to personal outcomes. Only three CCs out of possible seven turned out to be significant.

The first canonical correlation result showed ($R_c = 0.73$, $R_c^2 = 0.60$, $X^2_{(266)} = 598.43$, $p \leq .01$) that left hand variate (composed of person's environmental forces and personal factors) was significantly related to the right hand variate (composed of personal outcomes). Both the canonical variates mutually shared 60 per cent variance. The redundancy index (0.3162) for the first right hand variate showed that 0.3162 out of a total variance (0.5253) in personal outcomes was shared with the variance in the left hand variate. The left hand variate could be thought to be loaded positively

Table 49

Canonical Correlation Showing Relationship of Personal, and
Person's Environmental Forces' Variables with Personal Outcomes

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
<u>Left hand set</u>			
ILC	0.91	0.04	- 0.08
SE	0.54	- 0.08	0.01
IM	0.72	- 0.04	- 0.00
CA	0.99	- 0.03	0.04
CT	0.79	0.18	0.04
FA	0.10	0.18	0.19
EM	0.46	0.12	0.27
JI	- 0.04	0.50	0.14
PTR	0.87	0.10	0.04
WIC	0.02	0.33	- 0.15
GC	0.63	- 0.01	- 0.05
SC	0.11	- 0.18	- 0.08
NSA	0.69	- 0.21	0.07
AAPS	0.48	- 0.11	0.02
II	0.36	0.01	0.11
OAPS	0.64	0.01	- 0.03
NCI	0.20	- 0.15	0.20
ASAPS	0.79	- 0.02	0.10

(table continues)

Table 49 (continued)

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
ANAPS	0.44	- 0.04	0.21
DPS	0.75	- 0.25	- 0.02
QBR	0.14	- 0.09	0.06
CPA	0.67	- 0.18	0.15
OWAJ	0.46	0.15	- 0.08
S	0.08	0.27	0.05
PI	0.68	- 0.16	- 0.03
PD	0.46	- 0.18	0.13
FO (PPE)	0.33	0.06	0.12
SEF (WE)	0.37	0.64	- 0.01
EPCI (PPE & PE)	0.34	- 0.12	- 0.02
IV (PPE)	0.39	- 0.08	0.02
EF (EWE)	0.31	- 0.11	0.14
ARO (EWE & CE)	0.21	- 0.07	- 0.02
FBA (EWE)	0.29	- 0.12	0.03
PSP (PE)	0.11	0.03	0.06
FDT (PE)	0.43	0.01	0.11
SC (EWE)	0.46	- 0.10	0.23
IV (PE)	0.53	0.06	0.12

(table continues)

Table 49 (continued)

	set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
Right hand set			
PE	1.00	- 0.13	- 0.13
QCEE	0.87	- 0.19	0.29
ExR	0.86	0.20	0.12
OEx	0.93	0.14	- 0.13
SCP	0.26	0.73	- 0.24
IJS	0.27	0.70	0.28
SJSHO	0.19	0.16	- 0.09
<u>Rc</u>	0.78	0.61	0.49
<u>Rc</u> ²	0.60	0.37	0.24
Chi-square	598.43	352.54	227.13
<u>df</u>	266	222	180
<u>p</u>	≤ 0.01	≤ 0.01	≤ 0.05
Variance <u>LHS</u>	0.2740	0.0345	0.0124
Redundancy <u>LHS</u>	0.1649	0.0129	0.0029
Variance <u>RHS</u>	0.5253	0.1675	0.0396
Redundancy <u>RHS</u>	0.3162	0.0628	0.0095

with personal variables such as Internal Locus of Control, Self-esteem, Intrinsic Motivation, Creative Abilities, Competence Thema, Environment Mastery, Personal Target Realization, Generalized Competence, Need for Self-actualization, Analytical Approach to Problem solving, Incubation and Illumination; Optimizing Approach to Problem solving, Associative Approach to Problem solving, Synthesizing Approach to Problem solving, Analogical Approach to Problem solving; Determined, Persistent, and Self-starter; Courteous, Popular, and Altruistic; Obedient, Willing to Accept Judgements; Passion for Innovation, Passion for Distinctiveness, and person's environmental forces' variables such as, Feedback and Opportunity (in Work Environment); Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment); Innovation Values (in Preprofessional Environment), External Facilitation (in Extrawork Environment), Freedom for Divergent Thought (in Professional Environment), Stimulation for Creativity (in Extrawork Environment), and Innovation Values (in Professional Environment). This variate was related to the right hand variate that was loaded positively with Personal Effectiveness, Quality Conscious Entrepreneurial Excellence, Excellence Recognition, and Output Excellence.

The second CC results ($R_c = 0.61$, $R_c^2 = 0.37$, $X^2_{(222)} = 352.54$, $p \leq .01$) showed that both the canonical variates

mutually shared 37 per cent variance. The redundancy index for the right hand set (0.0628) showed that 0.0628 out of the a total variance (0.1675) in personal outcomes was shared with the variance in left hand variate. The left hand variate could be thought to be loaded positively with Job Involvement (personal variable); and Stimulation, Encouragement, and Feedback (in Work Environment), a factor of person's environmental forces' variable. This cononical variate was related significantly to the right hand variate that was loaded positively with Satisfaction with Company Policies and Intrinsic Job Satisfaction.

The third CC though significant, did not have loadings equal to or greater than 0.30. Therefore it would be reported in the table, but would not be described here.

Relationship of organizational variables and organizational effectiveness with personal outcomes. Table 50 shows the results of canonical correlation in which left hand variate (composed of organizational factors and organizational effectiveness) was related to the right hand variate (composed of personal outcomes), Three CCs out of possible seven turned out to be significant.

The first CC results ($R_c = 0.73$, $R_c^2 = 0.53$, $\chi^2_{(105)} = 415.31$, $p = .01$) showed the left hand canonical variate was related significantly to the right hand variate and both the variates mutually shared 53 per cent variance. The

Table 50

Canonical Correlation Showing Relationship of Organizational
Variables and Organizational Effectiveness with Personal Outcomes

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
Left hand set			
TS	0.60	- 0.45	- 0.10
RCL	0.70	- 0.47	0.04
TC	- 0.14	- 0.05	- 0.05
CTC	- 0.07	- 0.16	0.07
NPLS	0.75	0.21	0.04
TY	0.51	- 0.28	- 0.21
WC	0.85	0.11	- 0.11
IWM	0.47	- 0.12	- 0.32
AO	0.93	- 0.09	0.22
TI	0.57	- 0.69	- 0.06
ETR	1.00	0.33	- 0.13
D	0.37	0.32	0.40
AS	0.14	0.48	0.13
SV	0.77	- 0.16	0.16
OE	1.00	0.26	- 0.13

(table continues)

Table 50 (continued)

	set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
Right hand set			
PE	0.52	- 0.75	- 0.13
QCEE	0.43	- 0.60	- 0.35
EXR	0.42	- 0.38	0.01
OEX	0.61	- 0.64	- 0.00
SCP	1.00	0.46	- 0.16
IJS	0.99	- 0.05	0.43
SJSHO	0.68	0.12	- 0.02
<u>Rc</u>	0.73	0.59	0.37
<u>Rc</u> ²	0.53	0.34	0.14
Chi-square	415.31	205.50	88.08
<u>df</u>	105	84	65
<u>p</u>	≅ 0.01	≅ 0.01	≅ 0.05
Variance <u>LHS</u>	0.4542	0.1075	0.0312
Redundancy <u>LHS</u>	0.2404	0.0369	0.0043
Variance <u>RHS</u>	0.5331	0.2433	0.0505
Redundancy <u>RHS</u>	0.2821	0.0837	0.0070

redundancy index (0.2821) for the right hand variate showed that 0.2821 out of a total variance (0.5331) in the right hand canonical variate was shared with or "explained by" the left hand variate. The left hand variate could be thought to be loaded positively with organizational variables such as Task Structure, Role Clarity, Nurturant Participative Leadership Style, Theory Y, Wholistic Concern, Informal Work Mechanism, Advancement Opportunity, Task Identity, Expertise Recognition, Decentralization, Skills Variety, and Organizational Effectiveness. This canonical variate was related to the right hand variate that was loaded positively with Personal Effectiveness, Quality Conscious Entrepreneurial Excellence, Excellence Recognition, Output Excellence, Satisfaction with Company Policies, Intrinsic Job Satisfaction; and Satisfaction with Job Security and Helping Others.

The second CC results ($R_c = 0.59$, $R_c^2 = 0.34$, $\chi^2_{(84)} = 205.50$, $p \leq .01$) showed that some of the organizational factors and Organizational Effectiveness were related significantly to some of the personal outcomes. Both the sets of variables mutually shared 34 per cent variance. The Rdx (0.0837) for right hand variate showed that 0.0837 out of the total variance (0.2433) in right hand variate was shared with the variance in the left hand variate. The left hand variate could be thought to be loaded positively

with Expertise Recognition, Decentralization, and Autonomy in Supervision; and loaded negatively with Task Structure, Role Clarity, and Task Identity. This canonical variate was related significantly to the right hand variate that was loaded positively with Satisfaction with Company Policies and loaded negatively with Personal Effectiveness, Quality Conscious Entrepreneurial Excellence, Excellence Recognition, and Output Excellence.

The third CC results showed significant relationship between the two variates ($R_c = 0.37$, $R_c^2 = 0.14$, $X^2_{(65)} = 88.08$, $p \leq .05$). The redundancy index for the right hand variate (0.0070) showed that out of the total variance (0.0505) in the right hand variate 0.0070 was shared with the variance in the left hand variate. The left hand variate could be thought to be loaded positively with Decentralization and loaded negatively with Informal Work Mechanism. The right hand variate could be thought to be loaded positively with Intrinsic Job Satisfaction and loaded negatively with Quality Conscious Entrepreneurial Excellence.

Relationship of personal variables and organizational effectiveness with personal outcomes. Table 51 shows the results of canonical correlation analysis in which left hand variate composed of personal variables and Organizational Effectiveness were related to right hand variate composed of personal outcomes. Four out of possible seven CCs turned out to be significant.

Table 51

Canonical Correlation Showing Relationship of Personal
Variables and Organizational Effectiveness with Personal
Outcomes

	Set 1	Set 2	Set 3	Set 4
Variables	Loadings	Loadings	Loadings	Loadings
Left hand set				
ILC	0.90	- 0.14	0.00	0.14
SE	0.50	- 0.24	0.03	- 0.02
IM	0.68	- 0.25	0.08	0.03
CA	0.95	- 0.28	0.03	- 0.17
CT	0.80	- 0.04	0.14	- 0.04
FA	0.12	0.12	0.19	- 0.21
EM	0.44	- 0.09	0.33	- 0.18
JI	0.07	0.49	0.24	- 0.15
PTR	0.87	- 0.10	0.05	- 0.10
WIC	0.11	0.37	- 0.02	0.16
GC	0.61	- 0.15	- 0.01	0.07
SC	0.07	- 0.19	- 0.17	- 0.05
NSA	0.63	- 0.37	- 0.01	- 0.05
AAPS	0.44	- 0.23	0.07	0.10
II	0.35	- 0.08	0.10	- 0.10
OAPS	0.61	- 0.19	0.04	- 0.02
NCI	0.14	- 0.24	0.02	- 0.40

(table continues)

Table 51 (continued)

	Set 1	Set 2	Set 3	Set 4
Variables	Loadings	Loadings	Loadings	Loadings
ASAPS	0.77	- 0.21	0.03	- 0.21
SAPS	0.54	- 0.19	0.19	- 0.10
ANAPS	0.42	- 0.12	0.05	- 0.31
DPS	0.68	- 0.41	- 0.16	- 0.19
QBR	0.10	- 0.17	0.07	0.01
CPA	0.59	- 0.41	0.20	0.08
OWAJ	0.47	- 0.01	0.13	0.23
S	0.13	0.24	0.14	- 0.03
PI	0.62	- 0.31	- 0.03	0.04
PD	0.40	- 0.30	0.01	- 0.17
OE	0.58	0.82	- 0.16	- 0.04
Right hand set				
PE	1.00	- 0.28	- 0.26	- 0.15
QCEE	0.83	- 0.28	0.03	- 0.37
EXR	0.87	- 0.07	0.38	0.31
OEX	0.94	- 0.09	0.07	0.17
SCP	0.57	0.93	- 0.16	0.00
IJS	0.46	0.68	0.21	- 0.40
SJSHO	0.36	0.43	- 0.27	0.02
<u>Rc</u>	0.79	0.64	0.46	0.41
<u>Rc</u> ²	0.62	0.41	0.21	0.17
Chi-square	602.11	340.76	196.86	131.56

(table continues)

Table 51 (continued)

	Set 1	Set 2	Set 3	Set 4
Variables	Loadings	Loadings	Loadings	Loadings
<u>df</u>	196	162	130	100
<u>p</u>	≤ 0.01	≤ 0.01	≤ 0.01	≤ 0.05
Variance <u>LHS</u>	0.3050	0.0835	0.0164	0.0233
Redundancy <u>LHS</u>	0.1883	0.0343	0.0035	0.0039
Variance <u>RHS</u>	0.5817	0.2400	0.0511	0.0642
Redundancy <u>RHS</u>	0.3592	0.0986	0.0109	0.0109

The first canonical correlation results showed that ($R_c = 0.79$, $R_c^2 = 0.62$, $X^2_{(196)} = 602.11$, $p = .01$) left hand variate was significantly related to the right hand variate. The redundancy index for right hand variate (0.3592) showed that out of the total variance (0.5817) in the right hand variate (0.3592) was shared with or "explained by" the variance in the left hand variate. The left hand variate could be thought to be loaded positively with personal variables such as Internal Locus of Control, Self-esteem, Intrinsic Motivation, Creative Abilities, Competence Thema, Environment Mastery, Personal Target Realization, Generalized Competence, Need for Self-actualization, Analytical Approach to Problem solving, Incubation and Illumination; Optimizing Approach to Problem solving, Associative Approach to Problem solving, Synthesizing Approach to Problem solving, Analogical Approach to Problem solving; Determined, Persistent, and Self-starter; Courteous, Popular, and Altruistic; Obedient, Willing to Accept Judgements; Passion for Innovation, Passion for Distinctiveness, and Organizational Effectiveness. This variate was related to the right hand variate that was loaded positively with Personal Effectiveness, Quality Conscious Entrepreneurial Excellence, Excellence Recognition, Outout Excellence, Satisfaction with Company Policies, Intrinsic Job Satisfaction; Satisfaction with Job Security and Helping Others.

The second CC results ($R_c = 0.64$, $R_c^2 = 0.41$, $\chi^2_{(162)} = 340.76$, $p \leq .01$) showed that the left hand variate was related significantly to the right hand variate. The redundancy index (0.0986) for right hand variate showed that 0.0986 out of the total variance (0.2400) was shared with the variance in the left hand variate. The left hand variate could be thought to be loaded positively with Job Involvement; Work Inclination and Control, (personal variables), and Organizational Effectiveness, and loaded negatively with personal variables such as Need for Self-actualization; Determined, Persistent, and Self-starter; Courteous, Popular, and Altruistic; Passion for Innovation, and Passion for Distinctiveness. This variate was related significantly to the right hand variate that was loaded positively with Satisfaction with Company Policies, Intrinsic Job Satisfaction; and Satisfaction with Job Security and Helping Others.

The results of third CC showed ($R_c = 0.46$, $R_c^2 = 0.21$, $\chi^2_{(130)} = 196.86$, $p \leq .05$) that left hand variate was significantly related to the right hand variate. The redundancy index 0.0109 for right hand variate showed that 0.0109 out of the total variance (0.0511) was shared with the variance in the left hand set. The left hand variate could be thought to be loaded positively with personal variable comprising Environment Mastery. This variate was related significantly to the right hand variate that was loaded positively with Excellence Recognition.

The fourth canonical correlation results ($R_c = 0.41$, $R_c^2 = 0.17$, $X^2_{(100)} = 131.56$, $p \leq .01$) showed that the left hand variate was related to the right hand variate. The redundancy index for right hand variate (0.0039) showed that 0.0039 out of the total variance (0.0642) was shared with the variance in left hand variate. The left hand variate could be thought to be loaded negatively with personal variable, namely Nonconventional Ideation. This variate was related significantly to the right hand variate that was loaded positively with Excellence Recognition and loaded negatively with Quality Conscious Entrepreneurial Excellence, and Intrinsic Job Satisfaction.

Relationship of organizational variables with personal outcomes. Table 52 shows the results of canonical correlation analysis in which left hand variate (composed of organizational factors) were related to the right hand variate (composed of personal outcomes). Three out of possible seven CCs turned out to be significant.

The first CC results ($R_c = 0.69$, $R_c^2 = 0.47$, $X^2_{(98)} = 379.05$, $p \leq .01$) showed that the left hand variate was related significantly to the right hand variate. The redundancy index (0.2746) for the right hand variate showed that 0.2746 of the total variance (0.5809) in right hand variate was shared with the variance in left hand variate. The left hand variate could be thought to be loaded positively with

Table 52

Canonical Correlation Showing Relationship of Organizational
Variables with Personal Outcomes

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
Left hand set			
TS	0.69	- 0.40	- 0.14
RCL	0.80	- 0.41	0.07
TC	- 0.15	- 0.06	0.02
CTC	- 0.06	- 0.16	0.18
NPLS	0.82	0.27	0.14
TY	0.58	- 0.24	- 0.24
WC	0.92	0.17	- 0.06
IWM	0.52	- 0.08	- 0.31
AO	1.00	- 0.01	0.37
TI	0.67	- 0.64	- 0.00
ETR	1.00	0.41	- 0.47
D	0.38	0.35	0.47
AS	0.12	0.49	- 0.09
SV	0.86	- 0.09	0.35
Right hand set			
PE	0.56	- 0.72	- 0.12
QCEE	0.53	- 0.56	- 0.38
EXR	0.48	- 0.35	0.00

(table continues)

Table 52 (continued)

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
OEX	0.68	- 0.59	- 0.00
SCP	1.00	0.52	- 0.13
IJS	1.00	0.02	0.41
SJSHO	0.68	0.16	- 0.03
<u>Rc</u>	0.69	0.58	0.37
<u>Rc</u> ²	0.47	0.34	0.14
Chi-square	379.05	200.55	84.01
<u>df</u>	98	78	60
<u>p</u>	≅ 0.01	≅ 0.01	≅ 0.05
Variance <u>LHS</u>	0.4962	0.1045	0.0333
Redundancy <u>LHS</u>	0.2345	0.0357	0.0046
Variance <u>RHS</u>	0.5809	0.2277	0.0508
Redundancy <u>RHS</u>	0.2746	0.0778	0.0069

Task Structure, Role Clarity, Nurturant Participative Leadership Style, Theory Y, Wholistic Concern, Informal Work Mechanism, Advancement Opportunity, Task Identity, Expertise Recognition, Decentralization, and Skills Variety. This variate was related significantly to the right hand variate that was loaded positively with Personal Effectiveness, Quality Conscious Entrepreneurial Excellence, Excellence Recognition, Output Excellence, Satisfaction with Company Policies, Intrinsic Job Satisfaction, and Satisfaction with Job Security and Helping Others.

The second CC result ($R_c = 0.58$, $R_c^2 = 0.34$, $\chi^2_{(78)} = 200.55$, $p \leq .01$) showed that some of the factors in left hand variate were related significantly to some of the factors in right hand variate. The redundancy index (0.0778) for the right hand variate showed that 0.0778 out of the total variance (0.2277) in right hand variate was shared with the variance in left hand variate. The left hand variate could be thought to be loaded positively with Expertise Recognition, Decentralization, and Autonomy in Supervision; and loaded negatively with Task Structure, Role Clarity, and Task Identity. The right hand variate was loaded positively with Satisfaction with Company Policies, and loaded negatively with Personal Effectiveness, Quality Conscious Entrepreneurial Excellence, and Output Excellence.

The third CC results ($R_c = 0.37$, $R_c^2 = 0.14$, $X^2_{(60)} = 84.01$, $p = .05$) showed that left hand variate was related significantly to the right hand variate. The redundancy index for the right hand variate (0.0069) showed that (0.0069) out of the total variance 0.0508 in right hand variate was shared with the variance in left hand variate. The left hand variate could be thought to be loaded positively with Advancement Opportunity, Decentralization, and Skills Variety, and loaded negatively with Informal Work Mechanism, and Expertise Recognition. This variate was related to the right hand variate that was loaded positively with Intrinsic Job Satisfaction and loaded negatively with Quality Conscious Entrepreneurial Excellence.

Relationship of personal, organizational, person's Environmental forces' variables and organizational effectiveness with personal outcomes. Table 53 shows the results of canonical correlation in which left hand variate (composed of personal, organizational, person's environmental forces' variables, and Organizational Effectiveness) were related to the right hand variate (composed of personal outcomes variables). Three CCs out of possible seven turned out to be significant.

The first CC results showed that left hand variate was related significantly to the right hand variate ($R_c = 0.82$, $R_c^2 = 0.66$, $X^2_{(37)} = 847.83$, $p = .01$). The

Table 53

Canonical Correlation Results Showing Relationship of Personal,
Organizational, Person's Environmental Forces' Variables and
Organizational Effectiveness with Personal Outcomes

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
Left hand set			
ILC	0.84	- 0.29	- 0.06
SE	0.43	- 0.30	0.00
IM	0.60	- 0.34	- 0.00
CA	0.88	- 0.41	0.02
CT	0.77	- 0.20	0.09
FA	0.15	0.07	0.17
EM	0.41	- 0.18	0.24
JI	0.17	0.38	0.22
PTR	0.84	- 0.24	0.04
WIC	0.18	0.29	- 0.02
GC	0.66	- 0.24	- 0.04
SC	0.04	- 0.15	- 0.12
NSA	0.64	- 0.42	- 0.03
AAPS	0.36	- 0.28	- 0.03
II	0.31	- 0.13	0.04
OAPS	0.56	- 0.28	0.04

(table continues)

Table 53 (continued)

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
NCI	0.11	- 0.22	0.08
ASAPS	0.71	- 0.32	0.03
SAPS	0.48	- 0.27	0.10
ANAPS	0.39	- 0.17	0.04
DPS	0.69	- 0.45	- 0.11
QBR	0.07	- 0.17	0.07
CPA	0.48	- 0.47	0.07
OWAJ	0.45	- 0.11	0.04
S	0.17	0.17	0.11
PI	0.64	- 0.37	- 0.05
PD	0.34	- 0.32	0.03
TS	0.70	- 0.05	0.07
RCL	0.77	- 0.01	0.15
TC	- 0.06	- 0.13	- 0.01
CTC	0.02	- 0.13	0.06
NPLS	0.46	0.48	0.12
TY	0.68	- 0.01	- 0.03
WC	0.64	0.42	0.03
IWM	0.44	0.10	- 0.10
AO	0.75	0.38	0.17
TI	0.77	- 0.20	0.05

(table continues)

Table 53 (continued)

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
ETR	0.73	0.67	- 0.05
D	0.10	0.43	0.13
AS	- 0.12	0.40	- 0.01
SV	0.64	0.27	0.16
FO (PPE)	0.33	- 0.06	0.05
SEF (WE)	0.62	0.36	0.16
EPCI (PPE & PE)	0.27	- 0.19	- 0.07
IV (PPE)	0.34	- 0.18	- 0.05
EF (EWE)	0.24	- 0.19	0.01
ARO (EWE & CE)	0.20	- 0.04	- 0.13
FBA (EWE)	0.25	- 0.15	- 0.06
PSP (PE)	0.10	- 0.04	0.06
FDT (PE)	0.38	- 0.17	0.07
SC (EWE)	0.39	- 0.22	0.05
IV (PE)	0.61	- 0.16	0.08
OE	0.73	0.61	- 0.08
Right hand set			
PE	1.00	- 0.42	- 0.16
QCEE	0.78	- 0.38	- 0.00
EXR	0.80	- 0.29	- 0.20
OEX	0.96	- 0.27	0.06

(table continues)

Table 53 (continued)

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
SCP	0.79	0.86	- 0.15
IJS	0.72	0.56	0.41
SJSHO	0.62	0.40	- 0.15
<u>Rc</u>	0.82	0.74	0.60
<u>Rc</u> ²	0.66	0.56	0.36
Chi-square	847.83	550.49	361.30
<u>df</u>	371	312	255
<u>p</u>	≤ 0.01	≤ 0.01	≤ 0.01
Variance <u>LHS</u>	0.2489	0.0845	0.0083
Redundancy <u>LHS</u>	0.1667	0.0467	0.0030
Variance <u>RHS</u>	0.6595	0.2398	0.0403
Redundancy <u>RHS</u>	0.4416	0.1327	0.0144

redundancy index (0.4416) for the first right hand variate showed that 0.4416 out of the total variance (0.6595) in right hand variate was shared with the variance in left hand canonical variate. The left hand canonical variate could be thought to be loaded positively with personal variables such as Internal Locus of Control, Self-esteem, Intrinsic Motivation, Creative Abilities, Competence Thema, Environment Mastery, Personal Target Realization, Generalized Competence, Need for Self-actualization, Analytical Approach to Problem solving; Incubation and Illumination; Optimizing Approach to Problem solving, Associative Approach to Problem solving, Synthesizing Approach to Problem solving, Analogical Approach to Problem solving; Determined, Persistent, and Self-starter; Courteous, Popular, and Altruistic; Obedient, Willing to Accept Judgements; Passion for Innovation, Passion for Distinctiveness, Organizational Variables, such as Task Structure, Role Clarity, Nurturant Participative Leadership Style, Theory Y, Wholistic Concern, Informal Work Mechanism, Advancement Opportunity, Task Identity, Expertise Recognition, Skills Variety, and person's environmental forces' variables including Feedback and Opportunity (in Preprofessional Environment); Stimulation, Encouragement, and Feedback (in Work Environment); Innovation Values (in Preprofessional Environment), Freedom for Divergent Thought (in Professional

Environment), Stimulation for Creativity (in Extrawork Environment), Innovation Values (in Professional Environment), and Organizational Effectiveness. This canonical variate was related significantly to the right hand variate that was loaded positively with Personal Effectiveness, Quality Conscious Entrepreneurial Excellence, Excellence Recognition, Output Excellence, Satisfaction with Company Policies, Intrinsic Job Satisfaction; and Satisfaction with Job Security and Helping Others.

The second canonical correlation results ($R_c = 0.74$, $R_c^2 = 0.56$, $X^2_{(312)} = 550.49$, $p \leq .01$) showed that the left hand variate was related significantly to the right hand variate. The redundancy index (0.1327) for the right hand set showed that 0.1327 out of the total variance (0.2398) in right hand variate was shared with the variance in left hand variate. The left hand variate could be thought to be loaded positively with Job Involvement (personal variable); Nurturant Participative Leadership Style, Wholistic Concern, Advancement Opportunity, Expertise Recognition, Decentralization, Autonomy in Supervision, (organizational variables); Stimulation, Encouragement, and Feedback (in Work Environment); and Organizational Effectiveness, but loaded negatively with some personal variables such as Self-esteem, Intrinsic Motivation, Creative Abilities, Need for Self-actualization; Determined,

Persistent, and Self-starter; Courteous, Popular, and Altruistic; Passion for Innovation, and Passion for Distinctiveness. This variate was related to the right hand variate that was loaded positively with Satisfaction with Company Policies, Intrinsic Job Satisfaction, and Satisfaction with Job Security Helping Others; but loaded negatively with Personal Effectiveness, and Quality Conscious Entrepreneurial Excellence.

The third CC though significant, did not have loadings equal to or greater than 0.30 in the left hand variate. Therefore this CC would not be described here, however it would be reported in the table.

Relationship of personal and organizational variables with personal outcomes. Table 54 presents the results of the canonical correlation analysis in which the left hand variate (composed of personal and organizational factors) was related to the right hand variate (composed of personal outcomes). Four CCs out of possible seven turned out to be significant.

The first CC results showed that the left hand variate was related significantly to the right hand variate ($R_c = 0.79$, $R_c^2 = 0.62$, $\chi^2_{(289)} = 757.71$, $p \leq .01$). Both the sets of variables mutually shared a variance of 62 per cent. The redundancy index (0.4115) for right hand set revealed that 0.4115 of the total variance (0.6589) in

Table 54

Canonical Correlation Showing Relationship of Personal and
Organizational Variables with Personal Outcomes

	Set 1	Set 2	Set 3	Set 4
Variables	Loadings	Loadings	Loadings	Loadings
Left hand set				
ILC	0.92	- 0.16	- 0.10	0.15
SE	0.51	- 0.23	- 0.01	- 0.00
IM	0.70	- 0.24	- 0.02	0.07
CA	0.99	- 0.26	- 0.01	- 0.14
CT	0.84	- 0.06	0.06	0.04
FA	0.15	0.11	0.16	- 0.09
EM	0.49	- 0.09	0.24	- 0.04
JI	0.11	0.43	0.21	0.03
PTR	0.91	- 0.09	- 0.00	- 0.07
WIC	0.11	0.32	- 0.04	0.18
GC	0.62	- 0.15	- 0.07	0.08
SC	0.06	- 0.16	- 0.11	- 0.10
NSA	0.64	- 0.33	- 0.05	- 0.07
AAPS	0.44	- 0.21	- 0.05	0.07
II	0.36	- 0.08	0.03	- 0.05
OAPS	0.64	- 0.18	0.02	- 0.00
NCI	0.17	- 0.20	0.09	- 0.34

(table continues)

Table 54 (continued)

	Set 1	Set 2	Set 3	Set 4
Variables	Loadings	Loadings	Loadings	Loadings
ASAPS	0.80	- 0.20	0.01	- 0.17
SAPS	0.57	- 0.18	0.09	- 0.03
ANAPS	0.44	- 0.10	0.03	- 0.26
DPS	0.69	- 0.38	- 0.13	- 0.21
QBR	0.12	- 0.14	0.08	- 0.02
CPA	0.61	- 0.39	0.06	0.12
OWAJ	0.49	- 0.04	0.02	0.27
S	0.15	0.21	0.10	0.03
PI	0.65	- 0.28	- 0.07	- 0.03
PD	0.43	- 0.26	0.02	- 0.18
TS	0.73	0.08	0.04	- 0.13
RCL	0.81	0.14	0.11	- 0.05
TC	- 0.03	- 0.14	- 0.00	0.08
CTC	0.06	- 0.13	0.07	0.03
NPLS	0.38	0.58	0.08	- 0.19
TY	0.60	0.09	- 0.06	- 0.05
WC	0.56	0.55	- 0.03	- 0.01
IWM	0.42	0.18	- 0.13	- 0.22
AO	0.69	0.53	0.12	- 0.07
TI	0.83	- 0.07	0.02	- 0.23
ETR	0.58	0.81	- 0.12	- 0.02

(table continues)

Table 54 (continued)

	Set 1	Set 2	Set 3	Set 4
Variables	Loadings	Loadings	Loadings	Loadings
D	0.01	0.47	0.11	0.08
AS	- 0.22	0.38	- 0.02	0.07
SV	0.61	0.40	0.13	- 0.18
Right hand set				
PE	1.00	- 0.29	- 0.17	- 0.19
QCEE	0.86	- 0.24	- 0.02	- 0.41
EXR	0.90	- 0.15	- 0.17	0.48
OEX	1.00	- 0.10	0.03	0.12
SCP	0.55	0.95	- 0.21	0.05
IJS	0.61	0.72	0.36	- 0.29
SJSHO	0.40	0.49	0.18	- 0.13
<u>Rc</u>	0.79	0.73	0.56	0.47
<u>Rc</u> ²	0.62	0.53	0.31	0.22
Chi-square	757.71	497.58	296.68	198.49
<u>df</u>	287	240	195	152
<u>p</u>	€ 0.01	€ 0.01	€ 0.01	€ 0.05
Variance <u>LHS</u>	0.3173	0.0874	0.0812	0.1770
Redundancy <u>LHS</u>	0.1982	0.0464	0.0025	0.0038
Variance <u>RHS</u>	0.6589	0.2600	0.0387	0.0776
Redundancy <u>RHS</u>	0.4115	0.1380	0.0119	0.0170

right hand variate was shared with the variance in left hand variate. The left hand variate could be thought to be loaded positively with personal variables including Internal Locus of Control, Self-esteem, Intrinsic Motivation, Creative Abilities, Competence Thema, Environment Mastery, Personal Target Realization, Generalized Competence, Need for Self-actualization, Analytical Approach to Problem solving; Incubation and Illumination; Optimizing Approach to Problem solving, Analogical Approach to Problem solving; Determined, Persistent, and Self-starter; Courteous, Popular, and Altruistic; Obedient, Willing to Accept Judgements; Passion for Innovation, Passion for Distinctiveness, and organizational variables such as Task Structure, Role Clarity, Nurturant Participative Leadership Style, Theory Y, Wholistic Concern, Informal Work Mechanism, Advancement Opportunity, Task Identity, Expertise Recognition, and Skills Variety. This variate was related significantly to the right hand variate that was loaded positively with Personal Effectiveness, Quality Conscious Entrepreneurial Excellence, Excellence Recognition, Output Excellence, Satisfaction with Company Policies, Intrinsic Job Satisfaction; and Satisfaction with Job Security and Helping Others.

The second CC results ($R_c = 0.73$, $R_c^2 = 0.53$, $\chi^2_{(240)} = 497.58$, $p = .01$) showed that both the canonical variates mutually shared 53 per cent of variance. The redundancy

index (0.1380) for the right hand variate showed that 0.1380 out of the total variance (0.2600) in right hand variate was shared with the variance in left hand variate. The left hand variate could be thought to be loaded positively with Job Involvement; Work Inclination and Control; (personal variables), Nurturant Participant Leadership Style, Theory Y, Advancement Opportunity, Expertise Recognition, Decentralization, Autonomy in Supervision, and Skills Variety (organizational variables), and loaded negatively with personal variable such as Need for Self-actualization; Determined, Persistent, and Self-starter; and Courteous, Popular, and Altruistic. This variate was related to the right hand variate that was loaded positively with Satisfaction with Company Policies, Intrinsic Job Satisfaction; and Satisfaction with Job Security and Helping Others.

The third CC results showed that both the variates mutually shared 31 per cent variance ($R_c = 0.56$, $R_c^2 = 0.31$, $\chi^2_{(195)} = 296.68$, $p \leq .01$). The redundancy index (0.0119) for the right hand variate showed that 0.0119 out of the total variance (0.0387) in right hand variate was shared with the variance in left hand variate. The left hand variate could be thought to be loaded positively with personal variables, namely Environment Mastery, and Job Involvement. This canonical variate was related significantly to the right hand variate that was loaded positively with Intrinsic Job Satisfaction.

The fourth CC results showed that the two sets of variables mutually shared 22 per cent of variance ($R_c = 0.47$, $R_c^2 = 0.22$, $\chi^2_{(152)} = 198.49$, $p \leq .05$). The redundancy index (0.0170) for the right hand variate revealed that 0.0170 out of the total variance (0.0776) in right hand variate was shared with variance in left hand variate. The left hand variate could be thought to be loaded negatively with Nonconventional Ideation, a personal variable. This variate was related significantly to the right hand variate that was loaded positively with Excellence Recognition, and loaded negatively with Quality Conscious Entrepreneurial Excellence.

Relationship of organizational variables with personal variables. Table 55 presents the results of canonical correlation in which left hand variate (composed of personal variables) was related to the right hand variate (composed of organizational variables). Only three canonical correlations out of possible fourteen turned out to be significant.

The first CC results showed that the left hand variate was related significantly to the right hand variate and both the variates mutually shared a variance of 61 per cent ($R_c = 0.78$, $R_c^2 = 0.61$, $\chi^2_{(378)} = 750.48$, $p \leq .01$). The redundancy index for the right hand variate (0.1853) showed that 0.1853 out of the total variance (0.3050) in right hand

Table 55

Canonical Correlation Showing Relationship of Personal Variables
with Organizational Variables

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
Left hand set			
ILC	0.74	0.08	- 0.19
SE	0.88	- 0.37	- 0.08
IM	0.86	- 0.26	- 0.03
CA	0.95	- 0.01	0.03
CT	0.74	0.27	- 0.06
FA	- 0.00	- 0.38	- 0.23
EM	0.36	0.20	0.03
JI	0.15	- 0.11	- 0.34
PTR	0.80	0.06	- 0.10
WIC	- 0.25	- 0.19	- 0.38
GC	0.29	- 0.12	- 0.06
SC	0.09	- 0.08	- 0.10
NSA	0.86	- 0.39	0.09
AAPS	0.41	- 0.01	- 0.02
II	0.42	0.36	- 0.12
OAPS	0.76	0.16	0.01
NCI	0.55	0.39	0.12

(table continues)

Table 55 (continued)

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
ASAPS	0.80	0.09	0.03
SAPS	0.59	0.26	- 0.11
ANAPS	0.56	0.47	0.08
DPS	0.81	- 0.02	0.21
QBR	0.09	0.21	- 0.18
CPA	0.72	- 0.12	0.02
OWAJ	0.63	0.30	- 0.28
S	0.13	0.41	- 0.33
PI	0.91	0.11	0.14
PD	0.60	0.28	0.24
Right hand set			
TS	0.77	0.11	- 0.16
RCL	0.84	0.15	- 0.30
TC	0.22	0.45	0.24
CTC	0.09	0.46	0.11
NPLS	0.25	0.41	- 0.32
TY	0.60	- 0.06	- 0.32
WC	0.38	0.49	- 0.26
IWM	0.49	0.24	0.00
AO	0.45	0.12	- 0.66
TI	0.96	- 0.38	0.02

(table continues)

Table 55 (continued)

	Set 1	Set 2	Set 3
Variables	Loadings	Loadings	Loadings
ETR	0.37	0.28	- 0.54
D	- 0.45	- 0.06	- 0.32
AS	- 0.64	- 0.11	- 0.14
SV	0.45	0.58	- 0.14
<u>Rc</u>	0.78	0.64	0.52
<u>Rc</u> ²	0.61	0.41	0.27
Chi-square	758.48	501.98	369.68
<u>df</u>	378	338	300
<u>p</u>	≤ 0.01	≤ 0.01	≤ 0.01
Variance <u>LHS</u>	0.3858	0.0627	0.0258
Redundancy <u>LHS</u>	0.2343	0.0258	0.0078
Variance <u>RHS</u>	0.3050	0.1055	0.0437
Redundancy <u>RHS</u>	0.1853	0.0437	0.0253

variate was shared with the variance in left hand variate. The left hand variate could be thought to be loaded positively with Internal Locus of Control, Self-esteem, Intrinsic Motivation, Creative Abilities, Competence Thema, Environment Mastery, Personal Target Realization, Need for Self-actualization, Analytical Approach to Problem solving; Incubation and Illumination; Optimizing Approach to Problem solving, Nonconventional Ideation, Associative Approach to Problem solving, Synthesizing Approach to Problem solving, Analogical Approach to Problem solving; Determined, Persistent, and Self-starter; Courteous, Popular, and Altruistic; Obedient, Willing to Accept Judgements; Passion for Innovation, and Passion for Distinctiveness. This canonical variate was related to the right hand variate that was loaded positively with Task structure, Role Clarity, Theory Y, Wholistic Concern, Informal Work Mechanism, Advancement Opportunity, Task Identity, Expertise Recognition, and Skills Variety but loaded negatively with Decentralization and Autonomy in Supervision.

The second CC results showed that the left hand variate was significantly related to the right hand variate ($R_c = 0.64$, $R_c^2 = 0.41$, $X^2_{(338)} = 501.98$, $p = .01$). The redundancy index (0.0437) for the right hand variate showed that 0.0437 out of the total variance (0.1055) in the right hand variate was shared with the variance in the left hand variate. The

The left hand variate was loaded positively with Incubation and Illumination; Nonconventional Ideation, Analogical Approach to Problem solving; Obedient, Willing to Accept Judgements; and Seniority, and loaded negatively with Self-esteem; Feedback and Accomplishment; and Need for Self-actualization. The right hand variate was loaded positively with Time Constraint, Constraint of Change, Nurturant Participative Leadership Style, Wholistic Concern, and Skills Variety, but loaded negatively with Task Identity.

The third CC results showed ($R_c = 0.52$, $R_c^2 = 0.27$, $\chi^2_{(300)} = 269.68$, $p \leq .01$) that both the sets of variables mutually shared a variance of 27 per cent. The redundancy index (0.0253) for the third right hand set showed that 0.0253 out of the total variance (0.0437) in right hand variate was shared with the variance in left hand variate. The left hand variate was loaded negatively with Job Involvement; Work Inclination and Control; and Seniority. This canonical variate was related significantly to the right hand variate that was loaded negatively with Role Clarity, Nurturant Participative Leadership Style, Theory Y, Advancement Opportunities, Expertise Recognition, and Decentralization.

The Desirable Person: Identifying a Construct

Considering the conceptualizations behind the constructs of creativity, competence, and excellence, these would be considered as "desirable" attributes of an individual as

contrasted with some other attributes such as aggression, conflict, and strain etc. The literature, however theoretical might they be, and the empirical findings of this study also to some extent, suggest that these are in fact the "desirable" attributes. Conceptually it should be possible to think of an individual who would possess all of these three "desirable" attributes at the same time. Such a concept would be called by this investigator as the concept of a desirable person. It was thought to be interesting to generate a score of the desirable person, and to examine its strength of association with other relevant variables. In order to generate the score for the construct of desirable person a second order factor analysis (principal factoring with iterations and oblique rotations) was done using a single factor forced solution (Appendix D). The score was generated through the usual method of multiplying the standard scores by the factor score coefficients. This weighted linear composite score was taken to be the representative of the concept of "desirable person".

Several multiple regression analyses were done. First of them was with the desirable person as the criterion and all other factors pertaining to person's environmental forces' variables, organizational characteristics, and personal characteristics (except for the factors of creativity and competence which now formed the part of the criterion

measure). Three more multiple regression analyses were done with desirable person as the criterion and the factors of (a) environmental forces' variables, (b) organizational characteristics, and (c) personal characteristics (except the variables of creativity and competence), treating each of the three categories (a, b, and c) as separate predictor sets. The results follow.

Predicting desirable person by personal, organizational, and person's environmental forces' variables. Multiple regression analysis results for the criterion variable desirable person and personal, organizational, and person's environmental forces' variables as the predictors showed that the overall regression was significant ($F_{(33,256)} = 9.89, p \leq .01$) and explained 56 per cent of variance in the criterion variable. Out of total 36 variables, Need for Self-actualization, Task Structure, and Autonomy and Result Orientation (in Extrawork and Childhood Environment) could not be included into the regression equation due to the F - level being insufficient for further computation. A short listed regression equation (Table 56) consisting of thirteen variables was significant ($F_{(13,276)} = 23.91, p \leq .01$), and explained 53 per cent variance. All the individual variables (except Innovation values (in Professional Environment)), Passion for Innovation, Innovation Values (in Preprofessional Environment), Passion for Distinctiveness,

Table 56

Multiple Regression Analysis Results Incorporating Personal, Organizational, and Person's Environmental Forces as Predictors, and Desirable Person as the Criterion

Variables	<u>r</u>	beta	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (1,276)
ILC	.53	.29	.53	.28	.31	.05	38.54**
DPS	.47	.14	.51	.37	.09	.03	7.62**
IV(PE)	.40	.04	.64	.41	.02	.02	0.61 ^{ns}
PI	.44	.06	.66	.44	.03	.02	1.48 ^{ns}
WC	.29	.11	.67	.45	.04	.02	5.61*
IV(PPE)	.31	.09	.68	.46	.03	.02	2.74 ^{ns}
CPA	.39	.10	.69	.48	.06	.03	4.42*
QBR	.14	.12	.70	.49	.06	.02	8.03**
S	.14	.14	.71	.50	.02	.01	9.73**
TI	.40	.12	.72	.51	.11	.04	6.48*
SC(EWE)	.31	.10	.72	.52	.04	.02	4.10*
PD	.33	.09	.72	.52	.07	.03	3.75 ^{ns}
FDT(PE)	.27	.08	.72	.53	.06	.03	3.06 ^{ns}
Constant				- 8.22			

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Regression	286.29	13	22.02	23.91	≤ .01
Residual	254.18	276	0.92		

ns = not significant at $p \leq .01$. * $p \leq .05$. ** $p \leq .01$.

and Freedom for Divergent thought (in Professional Environment) were significant. Remaining positive predictors could be interpreted as having their strength of association in the following order. Internal Locus of Control; Determined, Persistent, and Self-starter; Seniority; Quiet, Bashful, and Reserved; Task Identity, Wholistic Concern; Courteous, Popular, and Altruistic; and Stimulation for Creativity (in Extrawork Environment).

Predicting desirable person by the dimensions of personal variables. MRA for desirable person as the criterion and personal factors as the predictors showed that the overall regression was significant ($F_{(11,278)} = 22.31$, $p \leq .01$) and explained 46 per cent of variance in the criterion. A short listed regression equation (Table 57) consisting of seven predictors was significant ($F_{(7,282)} = 33.95$, $p \leq .01$) and explained 46 per cent of variance. All the predictors were individually significant, and could be interpreted as having their strength of association in the following order, Internal Locus of Control; Determined, Persistent, and Self-starter; Passion for Innovation; Courteous, Popular, and Altruistic; Seniority, Passion for Distinctiveness; and Quiet, Bashful, and Reserved.

Predicting desirable person by the dimensions of organizational variables. MRA results for desirable person the criterion and organizational factors the predictors

Table 57

Multiple Regression Analysis Results Incorporating Personal
Variables as Predictors, and Desirable Person as the Criterion
Variable

Variables	<u>r</u>	beta	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (1,282)
ILC	.53	.34	.53	.28	.36	.05	47.59**
DPS	.47	.21	.61	.37	.14	.03	17.11**
PI	.44	.13	.64	.41	.06	.02	6.12*
CPA	.39	.13	.65	.42	.09	.03	7.33**
S	.14	.12	.66	.44	.01	.01	7.78**
PD	.33	.11	.67	.45	.08	.04	5.27*
QBR	.14	.10	.68	.46	.05	.02	4.59*
Constant				- 7.09			

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Regression	247.17	7	35.31	33.95	$\leq .01$
Residual	293.30	282	1.04		

*p $\leq .05$. **p $\leq .01$.

showed that the overall regression was significant ($F_{(14,275)} = 10.77, p \leq .01$) and explained a total of 35 per cent variance in the criterion. A short listed regression equation (Table 58) consisting of seven variables was significant ($F_{(7,282)} = 20.65, p \leq .01$) and explained 34 per cent variance. All the predictors were individually significant. Out of the significant predictors, Autonomy in Supervision was the negative predictor. Remaining positive predictors could be interpreted as having their strength of association in the following order. Task Identity, Task Structure, Role Clarity, Wholistic Concern, Skills Variety, and Time Constraint.

Predicting desirable person by the person's environmental forces' variables. Multiple regression analysis results for desirable person as the criterion and person's environmental forces' variables as the predictors showed that the overall regression was significant ($F_{(11,278)} = 7.61, p \leq .01$) and explained a total of 23 per cent variance in the criterion. A short listed regression (Table 59) consisting of four predictors was significant ($F_{(4,285)} = 20.18, p \leq .01$) and explained 22 per cent of variance. All the predictors (except Innovation Values (in Preprofessional Environment) were significant individually and could be interpreted as having their strength of association in the following

Table 58

Multiple Regression Analysis Results Incorporating Organizational Variables as Predictors, and Desirable Person as the Criterion

Variables	<u>r</u>	beta	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (1,282)
TI	.40	.23	.40	.16	.20	.05	18.77**
RCL	.38	.14	.48	.23	.08	.04	5.35*
AS	-.23	-.18	.52	.27	-.14	.04	13.83**
IWM	.27	.13	.55	.30	.11	.04	6.52*
SV	.29	.13	.56	.31	.07	.03	6.38*
TS	.39	.15	.57	.33	.09	.04	6.22*
TC	.15	.11	.58	.34	.07	.03	4.90*
Constant					- 4.22		

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Regression	183.13	7	26.16	20.65	$\leq .01$
Residual	357.34	282	1.27		

* $p \leq .05$. ** $p \leq .01$.

Table 59

Multiple Regression Analysis Results Incorporating Person's
Environmental Forces' Variables as Predictors, and Desirable
Person as the Criterion

Variables	<u>r</u>	beta	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (1,285)
IV (PE)	.40	.25	.40	.16	.10	.03	14.90**
SC (EWE)	.31	.19	.45	.21	.07	.02	10.39**
SEF (WE)	.25	.11	.46	.21	.06	.03	4.11*
IV (PPE)	.31	.10	.47	.22	.04	.02	2.27 ^{ns}
Constant					- 3.13		

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Regression	119.33	4	29.83	20.18	$\leq .01$
Residual	421.14	285	1.47		

ns = not significant at $p = .01$.

* $p \leq .05$. ** $p \leq .01$.

order: Innovation Values (in Professional Environment), Stimulation for Creativity (in Extrawork Environment); and Stimulation, Encouragement, and Feedback (in Work Environment).

Attempting to Test the Conceptual Scheme

It was mentioned early in the result section that owing to the constraints, a thorough testing of model that would incorporate all of the sixty variables would be beyond feasibility. However, a modest attempt would be made in this section to formulate the conceptual scheme in such a way that each sector would be treated as one variable separately and then the bivariate covariations among the five sectors would be decomposed on the lines of path analytic procedure.

All the dimensions of variables pertaining to a sector were forced into a single factor and the factor score for that sector was generated. Thus five composite factor scores were generated pertaining to five sectors. (Appendix E). The following bivariate relationships were examined (a) Sector a with Sector c, (b) Sector c with Sector d, (c) Sector c with Sector e, (d) Sector b with Sector d, (e) Sector b with Sector e, and (f) Sector d with Sector e. For a visual presentation Figure 1 may be referred to. The decomposition of the bivariate covariation among the sectors is presented in Table 60 showing the correlation coefficients, path coefficients, and effect coefficients (Blalock, 1971). The

Decomposition of Bivariate Covariations

Bivariate relationship between sectors	Total covariance		Causal		Non-causal	
	(A)	Correlations	Direct	Indirect	Total	(E) = (A -D)
			(B)	(C)	(D) = (B+C)	
C A	.46		.46	none	.46	none
D C	.10		.10	none	.10	none
E C	.52		.49	.04	.52	none
D B	.58		.58	none	.58	none
E B	.53		.51	.07	.58	none
E D E D	.42		.42	none	.42	none

Note. Coefficients have been individually rounded off and therefore the derived values may not tally exactly.

path coefficients (P) are essentially beta weights obtained through regression equations whereas effect coefficients (c) measure the accompanying changes in a variable given a unit change in the "causal" variable while controlling for extraneous causes. The effect coefficients were computed as follows.

$$C_{ca} = P_{ca}$$

$$C_{dc} = P_{dc}$$

$$C_{ec} = (P_{ed} \times P_{cd}) + P_{ec}$$

$$C_{db} = P_{db}$$

$$C_{eb} = (P_{ed} \times P_{bd}) + P_{eb}$$

$$C_{ed} = P_{ed}$$

The path coefficients from latent variables associated with Sectors d and e were calculated by taking the square root of $(1 - R^2)$, where the multiple R was of Sectors b and c with Sector d (for Sector d), and Sectors b, c, and d with Sector e (for Sector e). It showed that 79.62 per cent of the variation in Sector d and 74.13 per cent of variation in Sector e remained unexplained by the "causal" relations explicitly included in the model. Sectors b and e are depicted in the Figure 1 as if they were the variables with known noncausal covariation. However, in reality they were correlated to the extent of 0.45. The assumption of noncausal covariation was made due to the possible

conceptualization of organization related and person related variables as separate entities, and secondly due to the nonfeasibility of "path analysis" including bidirectional causality which most likely would have characterized the relationship between the Sectors b and c.

For that reason, bidirectional causality and feedback loops could be thought to be existing among almost all the Sectors. Path coefficients were calculated for each Sector as the dependent measure separately. Tables 61, 62, 63, 64, and 65 show the path coefficients and correlation coefficients with Sectors e, d, c, b, and a respectively as the dependent measure. Values in parentheses (in tables) are path coefficients, the values outside parentheses are bivariate correlation coefficients. Values underlined within parentheses are the direct effects of a Sector. A perusal of the tables 61 to 65 would show the intricacies of the effects. For example, Table 61 shows that the Sector c had greatest direct effect on Sector e, meaning that the personal characteristics had greatest contribution to personal outcomes. The next greatest effect, however, was that of organizational characteristics (Sector b), which could have been expected. One might also conclude that the effect of organizational outcome (Sector d) on personal outcome (Sector e) was less compared to that of organizational variables (Sector b).

Table 61

Showing Possible Combinations of Path Coefficients with Sector e as the Dependent Measure in a Recursive Model

Sectors	a	b	c	d	e (dependent)
a	1 (.04656)	.2705 (.07744)	.4612 (.16199)	.0450 (.00961)	.2956
b	.2705 (.01259)	1 (.28629)	.4513 (.15851)	.5766 (.12310)	.5805
c	.4612 (.02147)	.4513 (.12920)	1 (.35123)	.0969 (.02069)	.5226
d	.0450 (.0021)	.5766 (.16508)	.0969 (.03403)	1 (.21349)	.4147
e	.2956	.5805	.5226	.4147	1

Note. Values outside parentheses are correlations, values within parentheses are path coefficients, and values underlined within parentheses show direct effects.

The path coefficients with organizational outcome (Sector d) as the dependent variable presented an interesting picture (Table 62). It showed that the organizational outcome was influenced to the greatest extent by the organizational variables (Sector b) which was as expected. However, what was unexpected was that the personal characteristics (Sector c) had a negative coefficient. This could possibly be interpreted to mean that the personal characteristics directly did not contribute to organizational outcome in a positive manner, rather the effect went through personal outcomes. This was manifested in the fact that (a) the direct effect of Sector e was positive, (b) indirect effect of Sector c through Sector e was positive, and (c) the indirect effect of Sector e through Sector b was also positive.

Table 63 with Sector c as the dependent variable showed that the greatest direct effect was that of Sector e. Here was a case perhaps of bidirectional causality, because as mentioned earlier, the direct effect of Sector d was also of comparable magnitude on Sector e (Table 61). Next greatest effect was that of the organizational variables, which made sense because it is a known inference that organizational characteristics to influence the personal characteristics of the role incumbents.

Table 62

Showing Possible Combinations of Path Coefficients with Sector
d as the Dependent Measure in a Recursive Model

Sectors	a	b	c	e	d (dependent)
a	1 (- <u>.061187</u>)	.2705 (.15492)	.4612 (- .11787)	.2956 (.06914)	.0450
b	.2705 (- .01655)	1 (<u>.57272</u>)	.4513 (- .11534)	.5805 (.135771)	.5766
c	.4612 (- .02822)	.4513 (.25847)	1 (- <u>.25558</u>)	.5226 (.12223)	.0969
e	.2956 (- .01809)	.5805 (.33247)	.5226 (- .13357)	1 (<u>.23389</u>)	.4147
d	.0450	.5766	.0969	.4147	1

Note. Values outside parentheses are correlations, values within parentheses are path coefficients, and values underlined within parentheses show direct effects.

Table 63

Showing Possible Combinations of Path Coefficients with Sector
c as the Dependent Measure in a Recursive Model

Sector	a	b	d	e	c (dependent)
a	1 (<u>0.28274</u>)	.2705 (.08199)	.0450 (- .01085)	.2956 (.10733)	.4612
b	.2705 (.07648)	1 (<u>.30311</u>)	.5766 (- .13906)	.5805 (.21077)	.4513
d	.0450 (.01272)	.5766 (.17477)	1 (- <u>.24116</u>)	.4147 (.15057)	.0969
e	.2956 (.08358)	.5805 (.17595)	.4147 (- .10001)	1 (<u>.36308</u>)	.5226
c	.4612	.4513	.0969	.5226	1

Note. Values outside parentheses are correlations, values within parentheses are path coefficients, and values underlined within parentheses show direct effects.

Table 64 with Sector b as the dependent variable also perhaps pointed to the bidirectional causality between Sector d and Sector b. It showed that organizational characteristics were also affected by the organizational outcome. Other coefficients were as would be expected.

Table 65 has been presented just in order to complete the set of dependent variables in the five variable path analytic explorations. According to model, it does not make much sense to treat the persons' environmental forces as the dependent variable, although going strictly by the coefficients, one may assume a hint of bidirectional causality between Sectors a and c.

The above described path analytic explorations, as mentioned earlier, were based on composite forced factor scores comprising the five Sectors. Once the dimensions of various scales or questionnaires pertaining to the various Sectors had been delineated, they should not ideally have been merged together. However, due to non-availability of the adequate facility for a complete and non-recursive model analysis this had to be done the way it was done. It is acknowledged that this analysis was a modest attempt to visualise just the indicative relationship and not much inference can be based on such incomplete modelling, especially in terms of the great variety of the underlying dimensions of the major constructs incorporated in the study.

Table 64

Showing Possible Combinations of Path Coefficients with Sector
b as the Dependent Measure in a Recursive Model

Sectors	a	c	d	e	b dependent
a	1 (.06203)	.4612 (.11583)	.0450 (.02015)	.2956 (.07249)	.2705
c	.4612 (.02861)	1 (.25115)	.0969 (.04339)	.5226 (.12815)	.4513
d	.0450 (.00279)	.0969 (.02434)	1 (.44778)	.4147 (.10169)	.5766
e	.2956 (.01834)	.5226 (.13125)	.4147 (.18569)	1 (.24522)	.5805
b	.2705	.4513	.5766	.5805	1

Note. Values outside parentheses are correlations, values within parentheses are path coefficients, and values underlined within parentheses show direct effects.

Table 65

Showing Possible Combinations of Path Coefficients with Sector
a as the Dependent Measure in a Recursive Model

Sectors	b	c	d	e	a dependent
b	1 (<u>.10274</u>)	.4513 (.17510)	.5766 (- .04568)	.5805 (.03834)	.2705
c	.4513 (.04637)	1 (<u>.38799</u>)	.0969 (- .00768)	.5226 (.03452)	.4612
d	.5766 (.05924)	.0969 (.03360)	1 (- <u>.07923</u>)	.4147 (.02739)	.0450
e	.5805 (.05964)	.5226 (.20277)	.4147 (- .03286)	1 (<u>.06605</u>)	.2956
a	.2705	.4612	.0450	.2956	1

Note. Values outside parentheses are correlations, values within parentheses are path coefficients, and values underlined within parentheses show direct effects.

The "interaction effect" on personal outcomes.

Additionally a hierarchical stepwise regression analysis was done to see whether there were any "interaction effects" on personal outcomes. The multiple regression equation was constructed with the composite score of personal outcomes (Sector e) as the criterion that would take the following form.

$$E' = a + b_1 B + b_2 D + b_3 C + b_4 CD + b_5 BD + b_6 BC + b_7 BCD$$

The alphabets B, C, D, and E in the equation represent the composite scores of Sectors b, c, d, and e respectively. The variables were entered in a hierarchical stepwise fashion. That is b, c, and d were entered at step number one; bc, bd, and cd interaction terms were entered at step number two; and bcd interaction term was entered last. Within a step, the order was decided by the computer and finally the variables were picked up in the order shown in the above mentioned regression equation. According to the respective beta weights however, the order of importance of the variables would be personal variables, organizational variables, and organizational effectiveness. The regression analysis results (Tables 66) showed the interaction term produced no significant effect, however, the three main effects were significant. This showed that the organizational variables (Sector b), organizational effectiveness (Sector d), and personal variables (Sector c)

Table 66

Results of Hierarchical Stepwise Multiple Regression Analysis
with Personal Outcomes as Criterion, and Personal Variables,
Organizational Variables, Organizational Outcome, and their
Interactions as Predictors

Variables	<u>r</u>	beta	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (3,286)
At step no. 1							
B	.58	.29			.27	.06	22.61**
D	.41	.21			.06	.02	14.62**
C	.52	.37	.67	.45	.34	.05	54.04**
Constant					-.69		
At step no. 2							<u>F</u> (6,283)
B	.58	.16			.15	.15	1.01
D	.41	.21			.06	.02	14.45**
C	.52	.33			.30	.18	2.95 ^{ns}
CD	.53	.03			.00	.02	0.02 ^{ns}
BD	.58	.15			.01	.01	0.87 ^{ns}
BC	-.03	-.02	.67	.45	-.02	.05	0.91 ^{ns}
Constant					-.71		

(table continues)

Table 66 (continued)

Variables	<u>r</u>	beta	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (7,282)
t step no. 3							
B	.58	.13			.13	.15	0.70 ^{ns}
D	.41	.22			.06	.02	14.70**
C	.52	.37			.34	.19	3.37 ^{ns}
CD	.53	- .00			- .00	.02	0.00 ^{ns}
BD	.58	.17			.01	.01	1.13 ^{ns}
BC	- .03	.08			.06	.14	0.22 ^{ns}
BCD	.10	- .10	.67	.45	- .00	.01	0.44 ^{ns}
Constant					- .74		

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
t step no. 1				
Regression	97.83	3	32.61	78.15**
Residual	119.34	286	0.42	
t step no. 2				
Regression	98.28	6	16.38	38.96**
Residual	118.89	283	0.42	
t step no. 3				
Regression	98.46	7	14.07	33.41**
Residual	118.71	282	0.42	

= not significant at $\alpha = .05$. * $p \leq .05$. ** $p \leq .01$.

could have main effects, in an additive type model, on personal outcomes.

The Second Order Factor Analysis Results

Traditionally the factor analytic approach to data analysis takes one of the forms known as orthogonal or varimax, and correlated or oblique type of rotation for the purpose of interpreting the factor analytic results. Both of these approaches have their own shares of strengths and weaknesses. Basically the orthogonal rotation attempts to make the factors statistically independent of each other whereas the oblique rotation may reflect the correlation among the factors if the factors are patterned that way. Almost equally large number of subscribers to both these approaches exist. While it is debatable to support either one of the two approaches, it has been pointed out that oblique rotation reflects more true representations of the complexity that marks a real life setting.

The present research made use of oblique rotation and thereby subscribed to the notion of intercorrelatedness of the factors. When the factors are correlated it is useful to investigate the higher order factors (Guilford, 1975; Kerlinger, 1978; Nunnally, 1981). For example instead of basic variables, the factors obtained through the factor analysis of the basic variables may themselves be treated as the basic inputs for the next order factor analysis and

the factors thus obtained would be the second order factors may be obtained using the lower order factors as the basic inputs. However, in most survey research data factor analysis of the order higher than second may become difficult to interpret.

A second order factor analysis (principal factoring with iteration and oblique rotation) was done to explore the salient second order dimensions behind the first order factors. Sixty first order variables yielded sixteen second order factors (Appendix F) out of which eight factors were retained owing to the stand mentioned earlier. The description of second order factors follows.

Factor I. This factor was composed of two "primary" factors. The first one (Associative Approach to Problem solving or ASAPS) belonged to the creative thinking questionnaire, and the other one (Determined, persistent, and Self-starter or DPS) belonged to the personal characteristics questionnaire. Both of these primary components represented, in a way, the characteristics of a person. This second order factor number one was therefore named as Desirable Personal Characteristics or (SF1:DPC).

Factor II. This factor was composed of five "primary" factors. The first one (Nurturant Participative Leadership Style or NPLS) belonged to the leadership styles questionnaire, the second one (Wholistic Concern or WC) belonged to the

theory Z questionnaire, the third and the fourth (Expertise Recognition or ETR) and (Skills Variety or SV) belonged to the climate questionnaire, and the last one was the (Organizational Effectiveness or OE). All of them could be thought of as representing the desirable characteristics of an organization. Therefore this second order factor was named as Desirable Characteristics of Organization or SF2:DCO.

Factor III. This factor was composed of five "primary" factors, belonging to the environment questionnaire. They were as follows: Feedback and Opportunity (in Preprofessional Environment) or FO(PPE); Innovation Values (in Preprofessional Environment) or IV(PPE); External Facilitation (in Extrawork Environment) or EF(EWE); Freedom of Belief and Action (in Extrawork Environment) or FBA(EWE); and Stimulation for Creativity (in Extrawork Environment or SC(EWE)). These factors taken together represented something that might be called an off the job creativity fostering environment. Hence it was named as Creativity Fostering Environment Off-the-Job or SF3:CFE(OFJ).

Factor IV. This fourth second order factor was composed of two "primary" factors. The first one (Feedback and Accomplishment or FA) and the other one (Job Involvement or JI) belonged to the job competence questionnaire. It was named Job Feedback, Accomplishment, and Involvement or SF4:JFAI.

Factor V. This factor was composed of two factors. The first one (Decentralization or D) and the second one (Autonomy in Supervision or AS) belonged to the climate questionnaire. These two "primary" factors reflected a climate that was characterized by autonomy. Therefore this fifth second order factor was named as Job Autonomy or SF5:JA.

Factor VI. This factor was composed of three "primary" factors belonging to the environment questionnaire. The first one Stimulation, Encouragement, and Feedback (in Work Environment) or SEF(WE); second one Freedom for Divergent Thought (in Professional Environment) or FDT(PE); and the third one Innovation Values (in Professional Environment) or IV(PE), represented the desirable characteristics of the work environment conducive to creativity. Therefore it was named as Creativity Fostering Environment on-the-Job or SF6:CFE(ONJ).

Factor VII. This factor was composed of two "primary" factors. The first one (Time Constraint or TC) and the second one (Constraint of Change or CCTC) both belonged to the role overload questionnaire. It was named as Constraint of Change and Time or SF7:CCT.

Factor VIII. This factor was composed of two "primary" factors. The first one (Intrinsic Job Satisfaction or IJS) and the second one (Satisfaction with Job Security and

Helping Others or SJSHO) belonged to the job satisfaction questionnaire. It was named Satisfaction with Job Situation or SF8:SJS.

Explorations with the Second Order Factors

As stated above fifty eight first order factors and two additional variables related to competence that is a total of sixty variables were reduced to sixteen variables upon second order factor analysis out of which eight second order factors were retained which have been described above. With reference to the conceptual scheme categorizing the variables in the study (Figure 1, p. 125), an attempt was made to place the second order factors in a scheme similar to that depicted in Figure 1. Decision regarding the placement of second order factors in a particular sector was based on the place of the first order factors comprising the second order factor. For example the second order factor 1 comprised two first order factors namely Associative Approach to Problem solving; and Determined, Persistent, and Self-starter. These two first order factors have been placed under Sector c, that is, person related variables in the conceptual scheme. Therefore the second order factor 1 was placed again in Sector c. However, there was one exception. The first order factor representing organizational effectiveness contained in Sector d, that is, organization related outcome had been clubbed with certain

first order factors comprising Sector b, that is, organization related variables. Given the fact that the Sector d had merged with Sector b, and under the assumption that organizational effectiveness is but and organization related variable; the shift of Sector d to Sector b was accepted. Hence the conceptual scheme comprising the second order factors was as depicted in Figure 3.

Question 16

What are the interrelationships of the dimensions of persons environmental forces' variables with the dimensions of personal variables?

Table 67 presents the results of the canonical correlation analysis in which left hand variate (composed of Creativity Fostering Environment off-the-Job and Creativity Fostering Environment on-th-Job) was related to the right hand variate (composed of Desirable Personal Characteristics; and Job Feedback, Accomplishment, and Attachment). Out of possible two CCs only one turned out to be significant. The first CC results showed that ($R_c = 0.45$, $R_c^2 = 0.28$, $\chi^2_{(4)} = 67.64$, $p \leq .01$) the left hand variate was related significantly to the right hand variate, and mutually shared 21 per cent of variance. The redundancy index (0.1053) for the right hand set showed that 0.1053 out of the total variance (0.5085) in the right hand variate was shared with the variance in the left hand variate. The left hand variate

Organizational
Variables
Desirable Characteristics of
Organization
Job Autonomy
Constraint of Change and Time

Sector a

Person's Environmental
Forces' Variables
Creativity Fostering
Environment Off-the-Job
Creativity Fostering
Environment On-the-Job

Sector C

Personal Variables
Desirable Personal
Characteristics
Job Feedback, Accomplishment
and Involvement

Sector e

Personal Outcome
Satisfaction with
Job situation

Figure 3. Reconceptualized scheme of relationships among sectors and variables based on "second order factor" analysis.

Table 67

Canonical Correlation Showing Relationships of Second
Order Factors of Person's Environmental Forces' Variables
with Second Order Factors of Personal Variables

Variables	Set 1
	Loadings
Left hand set	
SF3: CFE(OFJ)	0.78
SF6: CFE(ONJ)	0.84
Right hand set	
SF1: DPC	1.00
SF4: SFAI	- 0.12
<u>Rc</u>	0.45
<u>Rc</u> ²	0.21
Chi-square	67.64
<u>df</u>	4
<u>p</u>	≤ 0.01
Variance <u>LHS</u>	0.6674
Redundancy <u>LHS</u>	0.1381
Variance <u>RHS</u>	0.5035
Redundancy <u>RHS</u>	0.1053

could be thought to be loaded positively with Creativity Fostering Environment-off-the-Job and Creativity Fostering Environment on-the-Job. The right hand variate was loaded positively with Desirable Personal Characteristics.

Question 17

What is the strength of association of Satisfaction with Job Situation with personal variables?

A multiple regression analysis was performed with Satisfaction with Job Situation as the criterion and Desirable Personal Characteristics, Job Feedback, Accomplishment and Involvement, as the predictor variables. The results (Table 68) showed that the overall regression was significant ($F_{(2,287)} = 6.27, p \leq .01$) and explained 4 per cent of variance. Job Feedback, Accomplishment, and Involvement; was the positive significant predictor of Satisfaction with Job Situation and Desirable Personal Characteristics was individually insignificant. These two variables taken together explained 4 per cent of variance in the criterion variable that is, Satisfaction with Job Situation.

Question 18

What are the interrelationships of second order organizational variables with second order personal variables?

Table 69 shows the results of the canonical correlation analysis in which second order organizational variables were related to second order personal variables. Two CCs

Table 68

Multiple Regression Analysis Results Incorporating Second OrderFactors of Person . Related Variables as Predictors, andSatisfaction with Job Situation as the Criterion.

Variables	<u>r</u>	beta	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (1,287)
EF4: JFAI	.19	.19	.19	.03	.16	.05	10.82**
EF1: DPC	.08	.09	.20	.04	.07	.04	2.19 ^{ns}
Constant					9.73		

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Regression	87.70	2	43.85	6.27	= .01
Residual	2007.12	287	6.99		

ns = not significant p at $\leq .05$.p $\leq .01$.

out of possible three turned out to be significant.

The first CC results showed that $R_c = 0.35$, $R_c^2 = 0.12$, $\chi^2_{(6)} = 45.96$, $p \leq .01$) the left hand variate (composed of personal factors) was related significantly to the right hand variate (composed of organizational factors) and mutually shared 12 per cent of variance. The redundancy index 0.0506 for the right hand set showed that 0.0506 out of the total variance (0.4163) in the right hand variate was shared with the variance in the left hand variate. The left hand variate could be thought to be loaded positively with Desirable Personal Characteristics and negatively loaded with Job Feedback, Accomplishment, and Involvement. The right hand variate could be thought to be loaded positively with Constraint of Change and Time and negatively loaded with Job Autonomy.

The second CC results showed significant relationship between the two variates ($R_c = 0.17$, $R_c^2 = 0.03$, $\chi^2_{(2)} = 8.77$, $p \leq .05$). Both the variates mutually shared 0.03 per cent of variance. The redundancy index 0.0095 for the right hand set showed that 0.0095 out of the total variance (0.3146) in the right hand variate was shared with the variance in the left hand variate. The left hand variate was loaded positively with Desirable Personal Characteristics; and Job Feedback, Accomplishment, and Involvement. The right hand variate was loaded positively with Desirable

Table 69

Canonical Correlation Showing Relationships of Second
Order Factors of Personal Variables with Second Order
Factors of Organizational Variables

	Set 1	Set 2
Variables	Loadings	Loadings
Left hand set		
SF1: DPC	0.78	0.63
SF4: SFAI	- 0.71	0.71
Right hand set		
SF2: DCO	0.22	0.85
SF5: JA	- 0.89	0.13
SF7: CCT	0.65	- 0.45
<u>Rc</u>	0.3485	0.1215
<u>Rc</u> ²	0.1735	0.0301
Chi-square	45.96	8.78
<u>df</u>	6	2
<u>p</u>	≤ 0.01	≤ 0.05
Variance <u>LHS</u>	0.4162	0.3146
Redundancy <u>LHS</u>	0.0506	0.0095
Variance <u>RHS</u>	0.5526	0.0672
Redundancy <u>RHS</u>	0.4500	0.0135

Characteristics of Organizations and negatively loaded with Constraint of Change and Time.

Question 19

What is the strength of association of Satisfaction with Job Situation as the criterion with the dimensions of person's environmental forces, organizational, and personal variables as the predictors?

A multiple regression analysis was performed with Satisfaction with Job Situation as the criterion and all other as the predictors. The results showed that the overall regression was significant ($F_{(7,282)} = 13.49$, $p \leq .01$) and explained a total of 25 per cent of variance. A short listed regression equation (Table 70) consisting of four factors was significant ($F_{(4,295)} = 23.63$, $p \leq .01$) and explained 13 per cent of variance. All the individual predictors (except Creativity Fostering Environment off-the-Job) were positive significant predictors of Satisfaction with Job Situation. And could be interpreted as having their strength of association in the following order, Desirable Characteristics of Organization, Job Autonomy; and Job Feedback, Accomplishment, and Involvement; as shown by their respective beta weights.

Table 70

Multiple Regression Analysis Results Incorporating Second Order
Factors of Personal, Organizational, and Person's Environmental
Forces' Variables as Predictors and Satisfaction with Job
Situation as the Criterion

Variables	<u>r</u>	beta	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (1,285)
SF2: DCO	.44	.40	.44	.19	.04	.01	58.48**
SF5: JA	.24	.17	.48	.23	.09	.03	10.03**
SF4: JFAI	.19	.13	.49	.24	.11	.05	6.12*
SF3: CFE(OFJ)	.08	.09	.50	.25	.02	.01	2.97 ^{ns}
Constant					4.63		

ANOVA for regression

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Regression	522.07	4	130.52	23.65	= .01
Residual	1572.75	285	5.52		

ns = not significant p at α .05

*p \leq .05. **p \leq .01.

Question 20

What is the strength of association of Desirable Characteristics of Organization with Desirable Personal Characteristics, Creativity Fostering Environment off-the-Job; Job Feedback, Accomplishment, and Attachment; Job Autonomy, Creativity Fostering Environment on-the-Job, Constraint of Change and Time, and Satisfaction with Job Situation?

Table 71 presents the results of MRA in which Desirable Characteristics of Organization was the criterion and all others were the predictor variables. The overall regression was significant ($F_{7,282} = 14.37, p \leq .01$) and explained a total of 26 per cent of variance. A short listed regression equation consisting of two factors was significant ($F_{(2,287)} = 49.89, p \leq .01$) explained 25 per cent of variance. All the predictors were individually significant and positive. They could be interpreted as having their strength of association in the following order Job Satisfaction and Creativity Fostering Environment on-the-Job.

Question 21

How the various second order factors differ on an average across the factors of ownership (private and public) and hierarchical levels (low, middle, and high)?

To see the effect of ownership (private vs public) and hierarchical position (low, middle, and high) on the second order factors 2 x 3 (ownership x hierarchy) univariate

Table 71

Multiple Regression Analysis Results Incorporating Second Order Factor Desirable Characteristics of Organization as the Criterion, and all other Second Order Factors as the Predictors

Variables	<u>r</u>	beta	<u>R</u>	<u>R</u> ²	<u>b</u>	Std. error of <u>b</u>	<u>F</u> (1,287)
SF8: SJS	.44	.39	.44	.19	3.98	.52	57.66**
SF6: CFE(ONJ)	.33	.26	.51	.25	1.11	.22	24.65**
Constant					32.34		

ANOVA for regression

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Regression	55326.68	2	27663.34	49.89	≤ .01
Residual	159132.84	287	554.47		

**p ≤ .01.

factorial analyses of variance were calculated. Significant results of ANOVAs that yielded at least one significant main effect are presented in Table 72. Only one ANOVA yielded a significant interaction effect which was for Constraint of Change and Time as the dependent measure. Results for this ANOVA would be presented in Table 73 and Figure 4. General description of the significant ANOVA results follows.

ANOVA results for Desirable Characteristics of Organization showed that the main effect of ownership was significant ($F_{(1,284)} = 6.63, p \leq .01$). The cell means revealed that private organizations have more desirable characteristics ($\bar{M} = 122.32$) than their counterparts public organizations ($\bar{M} = 113.61$).

For Job Feedback, Accomplishment, and Involvement ANOVA results showed that both the main effects were significant. This meant that the respondents, on an average, showed differential magnitudes of Job Feedback, Accomplishment, and Involvement; across the variable ownership and hierarchical position. Specifically respondents in public organizations had more ($\bar{M} = 13.56$) Job Feedback, Accomplishment, and Involvement than their private organizations counterparts ($\bar{M} = 12.74, F_{(1,284)} = 4.61, p \leq .05$). The cell means across the hierarchical level revealed that the top level respondents had significantly greater Job Feedback,

Across Ownership and Hierarchy level

$p = .05$ $p = .01$

Accomplishment, and Involvement ($\underline{M} = 14.03$) than their low level respondents counterparts ($\underline{M} = 12.43$, $F_{(2,284)} = 6.03$, $p \leq .01$).

For the variable Creativity Fostering Environment on the Job the main effect of ownership was significant ($F_{(1,284)} = 4.69$, $p \leq .05$). The cell means revealed that the respondents enjoyed Creativity Fostering Environment on-the-Job more ($\underline{M} = 29.24$) compared to the respondents in public organizations ($\underline{M} = 27.55$).

ANOVA results for the second order factor, namely Constraint of Change and Time showed that the main effects were insignificant (Table 73) but the interaction effect of ownership x hierarchy was significant ($F_{(2,284)} = 5.09$, $p \leq .01$). Internal Comparison among means showed that more Constraint of Change and Time was experienced by the middle level respondents of private organization ($\underline{M} = 11.47$) compared to middle level respondents of public organizations ($\underline{M} = 9.87$) and high level respondents of private organizations ($\underline{M} = 9.52$) respectively (Figure 4).

Analysis of Variance Result for Second Order Factor Constraint of Change and
Time as a Function of Ownership χ^2 Hierarchy Level

Ownership	Hierarchy levels			MS	F (2,284)
	Low (b_1)	Middle (b_2)	High (b_3)		
Private (a_1)	11.48	11.47	9.52	63.90	5.09*
Public (a_2)	10.66	9.87	11.22		

*p = significant at $\alpha = .05$.

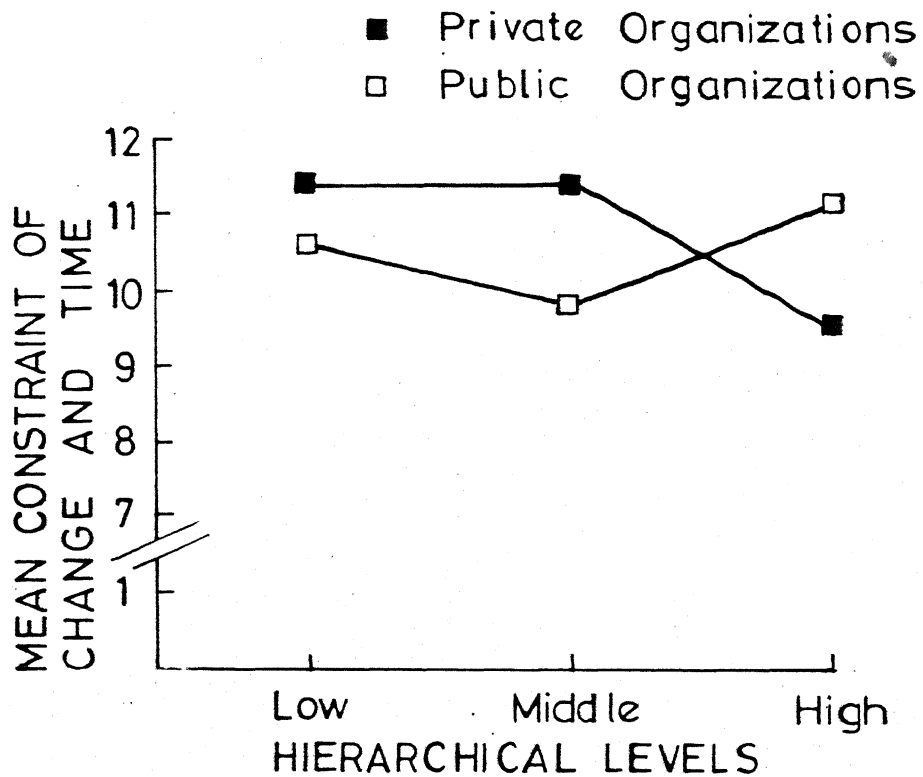


Figure 4. Mean constraint of change and time as a function of ownership and hierarchical levels of role incumbents.

Differences Between Least and Most "Effective"

Organizations

The study included ten organizations in the sample. Unfortunately no "objective" criteria of effectiveness could be incorporated. However, a perceptual measure of organizational effectiveness was included. To the extent that such measures can be treated as having some correspondence with the objective measures, it would be interesting to see the organizational differences in terms of effectiveness. Subsequently the variables found to be present in high magnitude among the more effective organizations could be evaluated against the variables with high magnitudes in less effective organizations.

An one way analysis of variance was calculated taking the ten organizations as the treatment levels and the organizational effectiveness measure scores as the dependent measure. Results showed that the overall mean differences were significant (Table 74). The internal mean comparison showed that the Organizational Effectiveness means were significantly different between organization numbers (07) and (08).. Due to confidentiality requirement, the names of the organizations are not being disclosed, however, the broad descriptions of the organizations are presented in Appendix G. The 07 turned out to be least effective and 08 turned out to be the most effective of the organizations

One way Analysis of Variance Results Showing Mean Differences on OrganizationalEffectiveness Across the Ten Organizations

	1	2	3	4	5	6	7	8	9	10
Mean	12.83	13.65	13.62	10.44	11.29	11.50	9.55	14.10	10.94	11.50
<u>SD</u>	2.71	2.15	2.19	2.36	3.09	3.36	3.27	2.35	3.42	2.72
No. of respondents	24	26	26	27	35	22	33	39	34	24

ANOVA summary table

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Between	657.297	9	73.033	8.90**
Within	2297.558	280	8.205	
Total	2954.855	289		

**p < .01.

on the criterion of the perceived organizational effectiveness measure. Other mean differences were not significant.

Once these two organizations were identified then one strategy could be to do a discriminant analysis with these two organizations as the criterion groups and all other variables as the classifying variables. The least effective organization 07 was designated as group 1 and correspondingly the most effective organization 03 was designated as group 2. The specific purpose of the discriminant analysis was to identify the personal, organizational, and person's environmental variables discriminating between the less and the more "effective" organization. The results (Table 75) showed the variables that could significantly discriminate, between the two groups ($\chi^2_{(26)} = 112.65, p \leq .01$). They were Satisfaction with Company Policies, Advancement Opportunity, Task Structure, Task Identity, Informal Work Mechanism, Quiet, Bashful, and Reserved, Environment Mastery, Decentralization, Competence Theme, Seniority, Passion for Distinctiveness, Expertise Recognition, Feedback and Accomplishment, Analogical Approach to Problem solving, Theory Y, Obedient and Willing to Accept Judgements, Analytical Approach to Problem solving, Innovation Values (in Professional Environment), Personal Effectiveness, Passion for Innovation, Freedom for Divergent Thought (in Extrawork Environment), Personal Target Realization, Autonomy

Discriminant Analysis Results for Personal, Organizational, and Person's Environmental

Forces' as the Discriminating and the Less and More "Effective" Organizations as the Criterion

Variables	SCP	AO	TS	TI	IWM	QBR	EM	D	CT	S	PD	ETR
<u>SDF</u>												
Coefficients	-.53	.48	.42	-.38	-.37	-.34	.33	-.33	.32	-.32	.31	-.29
<u>Variables</u>												
FA	ANAPS	TY	OWAJ	AAPS	IV(PE)	PE	PI	FDT(EWE)	PTR	AS	SC	TC
<u>SDF</u>												
Coefficients	.27	-.23	-.22	.20	.20	-.19	-.19	-.18	.17	-.14	-.14	-.13
<u>RC</u>												
χ^2	df	p	<u>Centroid of groups</u>				<u>Prediction results</u>					
			Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Total	
.93	112.67	26	0.00	1.00	-.85		97.0%	100.0%	98.61%			

in Supervision, Specific Competence, Time Constraint; and Work Inclination and Control in order of classificatory strength as evidenced by their respective standardized discriminant function coefficients.

The SDF could be thought to be loaded positively with Advancement Opportunity, Task Structure, Environment Mastery, Competence Thema, Passion for Distinctiveness, Feedback and Accomplishment, Obedient, Willing to Accept Judgements; Analytical Approach to Problem solving, Freedom for Divergent Thought (in Extrawork Environment), Time Constraint; Work Inclination and Control; and loaded negatively with all other variables. Considering the nature and the respective arithmetic signs of the discriminating variables entered in the SDF, this function seemed to represent a relatively undesirable state of affairs in terms of greater number of variables. Since the criterion variable, that is, Organizational Effectiveness was something desirable, one would expect this function to be present in less magnitude in the high criterion group, that is 08. The relative magnitudes of the centroids of groups in reduced space revealed the same (centroid of group 1 = 1.00, group 2 = - 0.85). The prediction results using this classification function showed that 98.61% per cent of "grouped" cases could be correctly classified.

While there is no denying the fact that the discriminant analysis presents a more technically sound picture of the variables associated with the less and more "effective" organizations. However, it may sometimes also be of interest to examine each and every variable in isolation of other variables (which might be mutually correlated) and see their variation on an average across the less and more "effective" organizations. To meet this end, one way analyses of variance were calculated with 07 and 08 as the treatment levels and all the 59 variables as dependent measures separately. Table 76 presents the means and standard deviations of the variables that showed significant average difference across 07 and 08.

Table 76 shows that the variables that had higher average magnitudes in the effective organization (08) were Work Inclination and Control (a factor of job competence), Nurturant Participative Leadership Style, Theory Y management practices, Wholistic Concern (a factor of theory Z); all the desirable factors of climate, namely Expertise Recognition, Decentralization, Autonomy in Supervision, Skills Variety; and two of the three factors of job satisfaction, namely Satisfaction with Company Policies; and Satisfaction with Job Security and Helping Others.

The less effective organization (07) on the other hand was marked by high average magnitudes of the variables such

Table 76

Results of the one way Analysis of Variance Showing the Significant Mean Differences on Variables as a Function of Less and More "Effective" Organizations

Variables	Organization 1 (<u>n</u> = 33)			Organization 2 (<u>n</u> = 39)			<u>F</u> (1,70)
	<u>M</u>	<u>Md</u>	<u>SD</u>	<u>M</u>	<u>Md</u>	<u>SD</u>	
EM	5.51	2.76	1.97	4.13	2.07	1.78	9.84**
WIC	6.67	3.34	1.95	7.56	3.78	1.62	4.56*
CPA	11.94	3.98	1.90	10.72	3.57	2.25	6.07*
TC	4.91	2.46	2.01	3.90	1.95	1.80	5.08*
CTC	5.36	2.68	2.18	3.92	1.96	1.77	9.60**
NPLS	58.12	2.91	17.85	68.90	3.45	12.87	8.81**
TY	13.15	3.29	2.93	14.49	3.62	2.34	6.15*
WC	12.91	2.58	3.56	15.49	3.09	2.95	11.29**
ETR	15.61	2.60	4.76	22.49	3.75	3.98	44.63**
D	12.09	2.42	4.03	16.15	3.23	3.66	20.14**
AS	5.30	2.65	1.67	6.49	3.25	1.59	9.50**
SV	8.64	2.88	1.82	9.85	3.28	2.16	6.48*
SCP	7.64	2.55	2.43	10.49	3.50	1.19	41.78**
SJSHO	6.36	3.18	1.60	8.00	4.00	0.86	30.56**

*p = .05. **p = .01.

Note. The Md column represents the adjusted means ranging within five points obtained by dividing the mean in column M by the number of items on which the means were based. The number of respondents in each organization is represented by n.

as Environment Mastery (which probably could have been an exalted and misplaced sense of environment mastery, but this would need verification), personal characteristic of being Courteous, Popular, and Altruistic; and the two factors of role overload, namely Time Constraint and Constraint of Change. It seemed that the work related positive and desirable features were indeed the hallmark of the more effective organization 08. A comparison between 07 and 08 in terms of the significant variables is depicted in Figure 5.

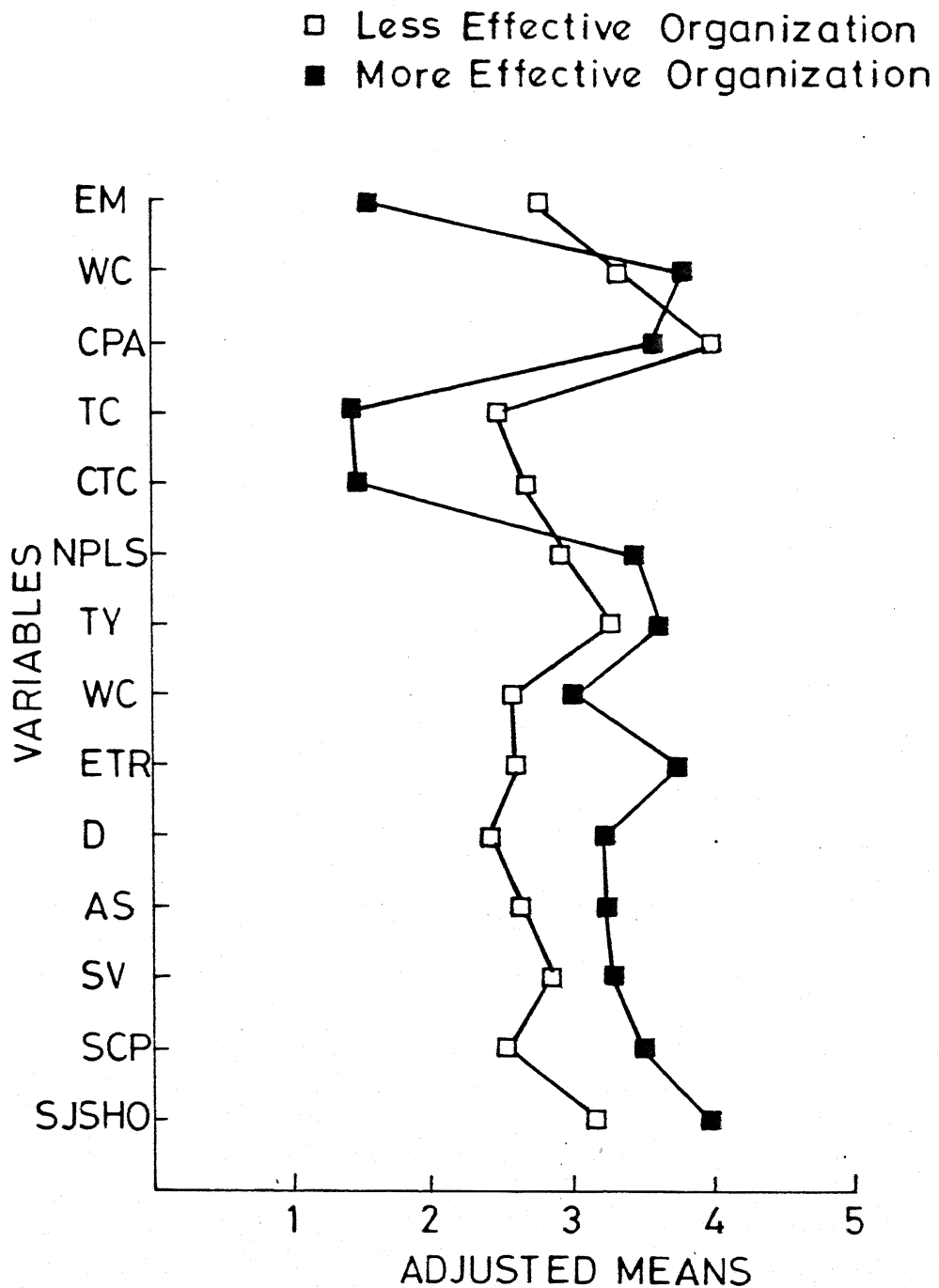


Figure 5. Mean differences on significant variables differentiating between less and more effective organization. (Refer to the list of abbreviations for meaning of the abbreviations on the vertical axis).

Chapter 4

Discussion

It would be recalled that this work was addressed to the structure and dynamics, and the possible antecedents and consequences of the three constructs, namely creativity, competence, and excellence. It was argued that surpassing the existing standards of performance could be a requirement in certain situations over and above being just effective. Although the construct of excellence does incorporate effectiveness it is construed to be something more than effectiveness. Effectiveness can be achieved even in the perspective of maintenance of status quo. Excellence on the other hand, implies a notion of going beyond and above status quo. Something akin to block busting plus an implicit thrust on continuing achievements. To achieve a new height and to go on achieving newer heights on a regular basis is what should form the core of the construct of excellence. This is possible, it was argued, through a conjoint and dynamic impetus of the constructs of creativity and competence, and of course a host of other relevant variables.

Apart from creativity and competence, several other variables were incorporated in this study on the basis of their relevance (and novelty and confusion) to the framework of the study. As was hypothesized, the variables revealed

their multidimensional nature upon factor analysis.

In the following section, the structure of the dimensions of variables in the study would be discussed first, then the dynamics of creativity, competence, and excellence would be discussed in the perspective of their mutual interrelationships as well as in relation to other variables. After discussing certain other salient issues and summing up the major findings, possible implications of the study would be dealt with. Thereafter certain limitations would be enumerated that were realized as this work drew to a close. Lastly, based on the insights gained during this work, few suggestions for future research would be offered. We now begin with the discussion on the structure of the dimensions of the variables in the study.

In order to decipher the underlying dimensionality of various constructs under study, factor analysis was done. Primarily factor analysis was used as data reduction technique. However, it could also identify the underlying empirical dimensions of the various constructs. In this subsection an attempt would be made to discuss the structure of several dimensions that emerged as a result of factor analysis.

Structure of creative thinking process. This form of questionnaire culminated into seven factors. They were as follows. (a) Analytical Approach to Problem solving,

(b) Incubation and Illumination, (c) Optimizing Approach to Problem solving, (d) Nonconventional Ideation, (e) Associative Approach to Problem solving, (f) Synthesizing Approach to Problem solving, and (g) Analogical Approach to Problem solving. Similar factors have been found by other investigators also. Creative thinking was conceptualized as an associative process of memory modification i.e., levelling, sharpening, and accentuation. This was very much similar to the factor Optimizing Approach to Problem solving. Traditionally Incubation and Illumination have been considered to be the roots of creative process (Wallas, 1926). This factor emerged as a significant dimension of creative thinking process in the present study too. Harrington (1980) studied the factor, namely analogical thinking and metaphorical thinking.

Structure of creative abilities. Factor analysis yielded one significant factor, namely Creative Abilities. Creative Abilities included ideational fluency, flexibility, originality, problem sensitivity, the ability to grasp the causes and visualise the consequences, the ability to elaborate, and the ability to restructure problems.

Structure of perceived job competence. When subjected to factor analysis this form yielded six dimensions of perceived job competence. They were as follows. (a) Competence Thema - it characterizes the overall, global

feelings attributed to a sense of competence. Wagner and Morse (1975) have also found this factor (Competence Thema);

(b) Feedback and Accomplishment - this factor characterizes a situation where role incumbents got feedback from the job and were also satisfied with their task accomplishment.

This in turn would lead them to feel competent; (c)

Environment Mastery - this factor could be thought of as a capacity to interact effectively with one's environment.

White (1959) proposed that there is a basic even biological urge or drive in all individuals to influence and master

their environment. Wagner and Morse (1975) have termed

this factor as confidence; (d) Job Involvement - this factor represents a situation where there was a match or congruence between individual's capabilities and job requirements,

consequently role incumbents felt job involvement; (e)

Personal Target Realization - this factor characterizes the feelings of competence in terms of personal target realization;

(f) Work Inclination and Control - the structure of this factor could be thought of as representing a situation in which role incumbents were intrinsically motivated towards the job and did not care for contingencies like pay etc.

to pursue the job. They did have control over their environments and this feeling of control and work inclination seemed to enhance their sense of competence.

Structure of excellence. Three significant factors emerged when this form subjected to factor analysis. They were as follow (a) Quality Conscious Entrepreneurial Excellence - this factor characterized a situation in which role incumbents were quality conscious and were ready to take risks in their jobs, (b) Excellence Recognition - this factor represented a situation where role incumbents felt that they were being recognized for their excellent works, and (c) Output Excellence - the structure of this factor could be visualised as the objective standards of excellence. Quality and quantity together would determine the criteria of excellence of an output.

Structure of person's environmental forces. This form yielded eleven factors, namely (a) Feedback and Opportunity (in Preprofessional Environment); (b) Stimulation, Encouragement, and Feedback (in Work Environment); (c) Esteem for Pioneers, Creators, and Innovators (in Preprofessional and Professional Environment); (d) Innovation Values (in Preprofessional Environment); (e) External Facilitation (in Extrawork Environment; (f) Autonomy and Result Orientation (in Extrawork Environment, and Childhood Environment); (g) Freedom of Belief and Action (in Extrawork Environment), (h) Penalty for Shabby Performance (in Professional environment); (i) Freedom for Divergent Thought (in Professional Environment); (j) Stimulation for Creativity

(in Extrawork Environment, (k) Innovation Values (in Professional Environment)). Taken together all these factors signify the impact of person's environmental forces as a whole.

Structure of biographical information. This form yielded one significant factor, namely Seniority. Seniority referred to the length of an employee's continuous service in an organization.

Structure of intrinsic motivation. This form culminated in only one significant factor, namely Intrinsic Motivation. As it is evidenced by the name itself, intrinsically motivated people are said to be engaged in a particular task if they view their task engagement as motivated primarily by their own interest and involvement in the task (Amabile, 1983).

Structure of locus of control. Factor analysis yielded one significant factor, namely Internal Locus of Control. Initially two factors emerged which could be thought of as representing internal and external locus of control respectively. But the second factor was not included being a single item factor.

Structure of need for pioneering. The factor analysis resulted in two significant factors that is, (a) Passion for Innovation, and (b) Passion for Distinctiveness. Both the factors in a way represented a situation where the

role incumbent had a passion for doing new things and also had a passion for distinctiveness or uniqueness.

Structure of need for self-actualization. This form culminated into one factor that was named Need for Self-actualization. The factor structure could be thought of as representing a situation in which role incumbents had a keen desire to actualize their potential. They were self motivated and tried to find meaning in social relationships and jobs. They wanted to establish themselves as a person with sense of fulfilment. They valued job satisfaction more than incentives like pay etc. Maslow (1954) found need for self-actualization at the top in his need hierarchy model.

Structure of personal characteristics. This form yielded four significant factors, namely (a) Determined, Persistent, and Self-starter; (b) Quiet, Bashful, and Reserved; (c) Courteous, Popular, and Altruistic; and (d) Obedient, Willing to Accept Judgements.

Structure of self-esteem. Out of the various factors of the construct self-esteem only one was retained, namely Self-esteem. This factor may be said to have the feeling of confidence and positive, realistic estimation of oneself. Self-esteem is a well known phenomenon. It has been used in many studies in different perspectives. But in conceptualizing the self-esteem confidence had been the common thread.

Structure of climate. This form yielded four significant factors, described as follows, (a) Expertise Recognition characterized a work situation that was full of Expertise Recognition. The organizational climate was such in which knowledge and expertise were highly valued. The main concern of the management was to develop specialized competence and expertise in order to achieve the high standards of performance, (b) Decentralization, (c) Autonomy in Supervision both represented the structural aspect of the organization, and (d) Skills Variety could be thought of as representing a situation where role incumbents required to have variety of skills i.e., nonspecialized capability of doing things well. Skills Variety had emerged as a significant factor of climate but in literature it has been described as a potent dimension of the concept of job characteristics (Oldham & Hackman, 1976).

Structure of job characteristics. This form culminated in two significant factors, namely (a) Advancement Opportunity, and (b) Task Identity. Advancement Opportunity characterized a situation where the role incumbents had opportunities to use their abilities the way they wanted to. They had been recognized for their good work. Task Identity could be thought of as representing a situation where role incumbents had derived pleasure from accomplishing a worthwhile piece of work. Oldham and Hackman (1976) have

identified five measurable characteristics of jobs, namely (a) skill variety, (b) task identity, (c) task significance, (d) autonomy, and (e) feedback.

Structure of leadership styles. This form yielded one significant factor, when subjected to the factor analysis. The factor was named Nurturant Participative Leadership Style. It was interesting to know that nurturant and participative styles of leadership were not different.

Structure of role clarity. This factor consisted of items that represented Role clarity in the sense that role incumbents were clear about their roles and what was expected of them in the organization.

Structure of role overload. Two significant factors emerged as the result of factor analysis. They were named (a) Time Constraint, and (b) Constraint of Change.

Structure of task structure. Shaw's (1963) scale was used to measure task structure. Factor analysis yielded one factor, namely Task Structure.

Structure of theory Y. Factor analysis yielded one significant factor of theory Y. Theory Y philosophy of management assumes that people are not lazy and unreliable by nature. It postulates that people could basically be self-directed and creative at work if properly motivated.

Structure of Theory Z. Two significant factors emerged as the result of factor analysis. (a) Wholistic

Concern that included interpersonal trust among the members of the organizations, familiarity, nonspecialized areas of work, strict promotional policies, and supportive and creativity fostering climate, (b) Informal Work Mechanism that included control mechanism marked with peer pressure, informal contacts, mutual understanding etc.

Structure of organizational effectiveness. This form culminated in only one significant factor, namely Organizational Effectiveness. It represented organizational effectiveness in terms of getting things done on the job, coping with unexpected problem, running smoothly with minimum confusion, and helping people who work get their job done.

Structure of job satisfaction. This form yielded three significant factors, namely (a) Satisfaction with Company Policies, (b) Intrinsic Job Satisfaction, and (c) Satisfaction with Job Security and Helping Others.

Structure of personal effectiveness. This form yielded one significant factor that was named Personal Effectiveness.

Having described the structure of the dimensions of the variables, we now turn to the discussion on the more salient issues addressed to in this research.

Theme of the study. Today many organizations find themselves operating in a dynamic environment marked by rapid technological change. Social and political changes

taking place throughout the world create a constant demand for new product and services as well as the expansion of the existing one. The organization therefore faces the problem of creating an environment and a set of managerial policies which will not only get primary task performed effectively but in addition, will stimulate innovation and creativity. Apparently innovation and creativity on part of the organization as well as on part of the role incumbents would be called for to stay ahead in the business. In such a situation identification of new thrust areas, their viability, prospects for their implementation, and the resultant innovative product and services would be required to cater for the consumption needs of the constituents of the environment, as well as for the survival and growth needs of the organization itself. Thus one of the key areas in this context appears to be that of creativity. Creativity mediated by competence may be thought to be resulting in excellence. In order to grow in the face of internationally high competitive set up, it has become necessary for any organization to emphasize more on quality and quantity of work. This would enable an organization to obtain the standards of excellence which could be thought of as a necessary prerequisite for organizational growth and survival. Unless an organization hires role incumbents who are creative, competent, and excellent, the problem of organization's stagnation might not be solved.

It would be recalled that this research focused on the construct of excellence which was postulated to be beyond effectiveness and was construed to mean surpassing of the existing performance standards. A number of antecedents were identified and explored. Two other variables that could be postulated to be closely linked with excellence were creativity and competence. Owing to the conceptualization considering these three variables as closely knit, the data analyses were designed to explore the antecedents and consequences of these three variables as well as the interrelationships among themselves.

If one were to make successive linkages between these three variables just for conceptual clarity sake, they could occur in the sequence of creativity, competence, and excellence; as has been mentioned in the introduction section.

Dynamics of creativity. Coming to creativity, all the dimensions of this variable appear to be positively related with all the variables that could be subsumed under the categories of personal, organizational, and person's environmental forces with the notable exceptions of the two factors of climate, namely Decentralization and Autonomy in Supervision. These two variables had negative loadings in the variate (refer to first CC result Table 6) that was composed of all other variables loading positively on it. Except for these two variables, it appeared that all other

variables loading positively on it. Except for these two variables, it appeared that all other variables should be present in high magnitude in order to have correspondingly high creativity. Even in zero order correlations, these two variables showed negative relationships with most of the variables including dimensions of creativity (Appendix C).

Both Decentralization and Autonomy in Supervision appear as variables with positive consequences in the literature. It is difficult to reason out why these variables have negative relationships with creativity (and other variables). However, a possible explanation may be as follows. Creativity in organizational context and at the time point when data were collected, has to be viewed as more of a private endeavor since creative effort and activity would often run counter to the structured way of doing things that an organization prescribes by design. Organizational emphasis on creativity is yet to attain popularity. In modern work organizations, every role incumbent has got to do an organizationally assigned duty. Except in the case of an organization with exceptionally good research and development emphasis, it is unlikely that creativity at individual level would be promoted by design. Organizations can be quite demanding so far as the performance is concerned. With Autonomy in Supervision and Decentralization usually also comes a pressure to perform

and accountability. Naturally in such a situation a person would feel solely responsible to maintain the existing performance standards by operating within the organizational protocols. The idea is that there could be difference between organizational effectiveness and personal effectiveness. In fact the zero order correlation coefficients (Appendix C) did show that these two variables were positively related to Organizational Effectiveness whereas the direction of relationship was negative in case of Personal Effectiveness. Probably with Decentralization and Autonomy in supervision, an executive tends to focus more toward productivity and routine activities of the group he or she supervises rather than the creativity aspects of personal interests. In fact, Inkson, Schwitter, Pheysey, and Hickson (cited in Payne & Pugh, 1976) did also find negative correlation between decentralization and perceived innovative behavior.

Some of the variables that have been found related positively with creativity elsewhere also are as follows. Intrinsic motivation was found to be conducive to creativity by Amabile (1985). Lefcourt (1976) conjectured that innovative mind grows among those who think themselves to be the free agents and makers of their own fate. In other words this suggested that there could be a positive relationship between Internal Locus of Control and creativity as has been found in the present study.

Need for novelty or Pioneering Motivation has been found to be related positively with creativity (Barron, 1958; Golovin, 1959; Houston & Mednick, 1963; Schaefer, 1967; Sprecher, 1959). In the present study two factors, namely Passion for Distinctiveness, and Passion for Innovation (factors of need for pioneering) were found to be positively related with creativity. Need for Self-actualization could be thought to be one of the most distinguishing feature of creative persons (Maslow, 1954).

Creative individuals have been found to be determined, persistent, and self-starter (Barron, 1955; Torrance, 1965). Quiet, Bashful, and Reserved (a factor of personal characteristics) was found to be related positively with creativity. However, in the literature these characteristics have been judged to have negative effects on creativity (Torrance, 1965). Considering the results of this study it seems that personal characteristics such as Quiet, Bashful, and Reserve would facilitate creativity. May be because creative thinking requires involvement of a person in isolation from other individuals, one needs to be reserve and quiet. Further Bashful may not necessarily mean shy in nature, rather it could also be interpreted in terms of the reluctance for mixing with others.

A related finding was that should someone wish to focus on a segment of creativity aspects then the dimensions like

Incubation and Illumination, Nonconventional Ideation, Synthesizing Approach to Problem solving, Analogical Approach to Problem solving could possibly be thought to be related to climate dimension Skills Variety, and the personal characteristics dimension Quiet, Bashful, and Reserved (refer to CC 2, Table 6).

The discriminant analysis results with the dimensions of creativity as the criteria (refer to Tables 9, 10, 11, 12, 13, 14, 15, and 16) showed that a number of antecedent variables could significantly discriminate between the high and low magnitudes of various dimensions of creativity. Therefore depending on situation specific needs of low or high creativity it should be possible to use variables in the study for diagnostic purposes. For example, it should be possible to screen a respondent high on a particular dimension of creativity on the basis of the knowledge of relevant discriminating variables.

The analysis of variance results showed that the dimensions of creativity did not differ significantly on an average across ownership and hierarchical position. This meant that creativity could be expected to be found both in public and private organizations and at all the three hierarchical levels in almost equal magnitudes.

Dynamics of competence. Another variable closely linked to excellence was competence. Competence had been conceptualized in terms of three measures i.e., job competence, generalized competence, and specific competence. These three taken together comprised the domain of construct of competence. The canonical correlation results (Table 7) showed that different factors could be thought to be related to specific aspects of competence. The left hand set of the first CC composed of variables that would relate to what may be called generalized and personalized competence (a combination of factors of overall job competence reflecting the competence emanating from the content of the person, as against job competence per se that reflects competence based on extra- person job aspects). The second left hand variate would relate to job competence and third left hand variate would relate to Generalized Competence in main. It was interesting to note that Autonomy in Supervision, factor of climate again had a negative loading in the first left hand variate loading just as it had in case of creativity. Probably the similar reasonings could hold as well for explanatory purposes. Further, in the second canonical correlation Decentralization and Autonomy in Supervision had positive loadings in the left hand variate and the right hand variate was loaded positively with job competence. This could be thought of as supported to the reasoning that

Decentralization and Autonomy in Supervision were facilitative of organizationally assigned roles.

Some of these variables that have been found to be positively related with competence by other investigators also are as follows. Internal Locus of Control has been found to be related positively with competence (Broedling, 1975; Joe, 1971; Lefcourt, 1966; Prociuk, & Breen, 1974; Tseng, 1970; Wright & Holman, 1980). Coopersmith (1967) found that individuals with high self-esteem were more competent than low self-esteem individuals. Role clarity was found to be positively related with perceived competence (McEnrue, 1984; Peters & O'Conner, 1980).

Discriminant analysis results (Tables 17, 18, 19, 20, 21, 22, 23, and 24) showed that a number of variables would significantly discriminate between high and low magnitudes of various dimensions of competence. This knowledge could gainfully be used for diagnostic purposes.

The analysis of variance results (Table 35) were significant for four out of eight dimensions of competence. These were Competence Thema, Environment Mastery, Job Involvement, and Generalized Competence. Competence Thema and Environment Mastery were found in greater magnitudes on an average in private organization role incumbents whereas Job Involvement was found more in public sector respondents. Job Involvement was found in greater magnitude among high

hierarchy level role incumbents compared to their low hierarchical level counterparts. Generalized Competence was found in greater magnitude in high hierarchy level respondents compared to middle level respondents. Thus private sector respondents were more competent in global sense (high on Competence Thema and had greater Environment Mastery). Considering the responsibility of public sector undertaking it should be worthwhile for public sector management to focus on the variables positively related to Competence Thema and Environment Mastery that are lacking. The private sector could do well by locating an acting upon the variables associated with Job Involvement. Also Job Involvement and Generalized Competence were relatively low at lower hierarchical levels. Considering the positive nature of these variables the management should act upon the correlates of these variables in order to enhance their magnitudes among low levels role incumbents. Such information, can be obtained from canonical correlation results (Table 7), discriminant analysis results (Tables 17, 18, 19, 20, 21, 22, 23, and 24), and correlation coefficients (Appendix C).

Dynamics of excellence. Excellence, the major thrust variable in this research had yielded three underlying dimensions upon factor analysis. The dimensions were Quality Conscious Entrepreneurial Excellence, Excellence

Recognition, and Output Excellence. The first dimension was comprised of components (Appendix B, Table B4) that could be crucial for any growth and diversification oriented organization. The second dimension reflected more of a desirable referent who is recognized as an excellent person worth emulating. Such excellence could be double edged. If it is used to further good and desirable cause, it would provide an additional charm and weight to other aspects of excellence and effectiveness. However, it may become a replica of mere management, if other positive aspects conducive to work and output are absent. The third dimension Output Excellence could be taken as the index of excellence comprising qualitative and quantitative excellence.

The Canonical correlation results (Table 3) showed that most of the variables included in this had positive loadings on the first left hand variate which was related to the right hand variate consisting of all the three dimensions of excellence. "Exceptions" were Quiet, Bashful, and Reserved; Nurturant Participative Leadership Styles, Decentralization, Autonomy in Supervision; Autonomy and Result Orientation (in Extrawork Environment and Childhood Environment); and Penalty for Shabby Performance (in Professional Environment).

These were the variables with relatively low loadings and therefore could be interpreted as having low contribution to the variate. The second CC result showed that the right hand variate reflected a situation having high Excellence Recognition with low Quality Conscious Entrepreneurial Excellence. This was the case of image management without the necessary content, something that should be treated as negative and superficial. As can be seen from the table this was related to left hand variate comprising mostly variables with negative loadings. In a way the second CC result was in tune with the first meaning that the variables having high positive loadings in the left hand variate of the first CC would be thought to be conducive to excellence dimensions comprising the right hand variate. One might conjecture that the first and the third dimensions of excellence were the more desirable dimensions. The second dimension would be desirable only when present in conjugation with the other two.

Multiple regression analyses were done with dimensions of excellence taken separately as criterion and all other variables as predictors. The results (Tables 40, 41, and 42) showed that of special interest could be creative abilities which turned out to be most potent predictors for two of the dimensions, and Generalized Competence which was a common predictor for all the three dimensions.

Therefore it seems that Creative Abilities and generalized Competence could be regarded important for excellence and were also important predictors of Personal Effectiveness (Table 39).

The analysis of variance results (Table 35) showed that Excellence Recognition was present in the higher magnitude among the private sector role incumbents. This was supportive of the popular notion that the private sector executives are usually smarter and more presentable than the public sector executives. This may be due to the fact that the private sector executives have to be result oriented and have to get going mostly on their own without any firm and permanent back-up assurance that a public sector executive might be having in at least some cases. The output Excellence was higher among the high hierarchical level executives compared to the middle hierarchical level executives. There is possibility that this finding points to a tautology in the sense that higher level role incumbents have reached up to that position because they have been able to show excellence in terms of quality and quantity and that because they are at high level therefore they show high Output Excellence. An interesting fact was that while the high level executives were higher on Output Excellence than the middle level executives, the difference was not significant from the low level executives. If one considers

sheer amount of time that is available to show Output Excellence as the crucial factor behind then the difference should have been higher between low and high executives which is not the case. In some sense the middle level appears to be a disadvantaged group. Probably this is so because of the dual responsibility of dealing with lower as well as higher level executives simultaneously that cuts into independence and authority as well as role clarity compared to high and low level executives.

As mentioned earlier the constructs of creativity, competence, and excellence are closely linked variables and would assume that order if one were to arrange them in the sequence of occurrence. In this sequence, excellence may be thought as the end culmination of creativity and competence. Thus it becomes worthwhile to examine the relationship of creativity and competence dimensions with the dimensions of excellence. A canonical correlation analysis to this effect was done (Tables 29, 30, and 31) the results of which showed that only one significant cc could be obtained. The dimensions that could be taken as important in relation to excellence were creativity dimensions such as Creative Abilities, Analytical Approach to Problem solving; Incubation and Illumination; Optimizing Approach to Problem solving, Associative Approach to Problem solving, Synthesizing Approach to Problem solving, and Analogical Approach to Problem solving; and Competence

dimensions such as Competence Thema, Environment Mastery, Personal Target Realization, and Generalized Competence.

The discriminant analysis results with the dimensions of excellence as the criteria (refer to Table 32, 33, and 34) showed a number of dimensions of creativity and competence that could discriminate between high and low magnitudes of various dimensions of excellence.

The discrimination between high and low magnitudes of the dimensions of excellence could also be made in terms of several other variables belonging to various constructs or sectors (refer to Tables 25, 26, and 27).

Since excellence is a relatively new variable, being tested empirically possibly for the first time in this research, probably no earlier empirical findings would exist that could be cited either in favour or against the present findings.

Dynamics of person related variables. Considering the individual as the unit, this unit may be conceptualized as an embodiment of a number of variables that comprised the sector c of the conceptual model employed in this research. The individual may be amenable to the impacts of the environment and the immediate organizational variables whose influences surround the person. To examine the relationships of environmental forces and organizational variables

(Tables 2 and 55) with personal variables two canonical correlation analyses were done relating the Sectors a and b with Sector c.

The relationship between Sector a and c (Table 2) could be interpreted to mean that better environmental inputs could be conducive to the culmination of certain desirable person level variables such as creativity, personalized competence, personal characteristics including determined, persistent, and Self-starter; Courteous, Popular, and Altruistic; Intrinsic Motivation, Self-esteem, Internal Locus of Control, Need for Pioneering including Passion for Innovation, Passion for Distinctiveness, and Need for Self-actualization. This finding highlighted the positive impact of various environmental forces except for the variable Penalty for Shabby Performance (in Professional Environment). This variable had relatively low loading on the respective variate. Since punishment is widely accepted as a method that produces less desirable results compared to rewards, the management might consider replacing the Penalty for Shabby Performance (in Professional Environment) with some positive reinforcers.

In the conceptual scheme the organization related variables and person related variables that is Sector b and c were postulated to be relationally independent, practically in real life situation variables are seldom

independent. Although at conceptual level it may be neater to treat Sectors b and c as independent, for exploratory purposes the relationship between the two was examined through canonical correlation analysis (Table 55). The results showed that the two Sectors were indeed correlated. Results could broadly be interpreted to mean that organization related variables such as Task Structure, Role Clarity, Theory Y, Theory Z, job characteristics, and factors of climate including Expertise Recognition and Skills Variety; would be related to person related variables such as creativity, personalized competence, Internal Locus of Control, Self-esteem, personal characteristics including Determined, Persistent, and Self-starter; Courteous, Popular, and Altruistic; Obedient, Willing to Accept Judgements; and Need for Pioneering including Passion for Innovation and Passion for Distinctiveness. Therefore it seemed that the salient organization related variables could be manipulated with a view to have desirable corresponding increase in person related variables. It should, however be noted that theoretically it is incorrect to presume any a priori cause - effect relationship on the basis of correlational results. The idea could certainly need further testing before determining whether, organization related variables have more of a causal standing compared to person related variables, however, if the redundancy index can be taken as any

indication (which is again questionable) then the redundancy index for the organization related variables was higher.

Whether this could mean greater variance being controlled by the person related variables in the organization related variables could have to be verified through further testing.

Dynamics of person related outcomes. When the main unit of analysis is person, as was the case in this research, then the person level outcomes may be taken as the ultimate culmination of all the antecedent variables including person related characteristics and organizational dynamics. Therefore the relationship of personal outcomes need to be examined with other variables occurring earlier in the sequence. Excellence was postulated to be a part of personal outcomes. Other personal outcome variables were personal effectiveness and job satisfaction. Since creativity and competence are supposed to play major roles in terms of personal outcomes the relationship of these two variables was examined with personal outcomes apart from the relationships of all other variables with the personal outcomes.

Relating personal outcomes with creativity and competence. Canonical correlation results relating dimensions of creativity and competence with personal outcomes showed (Table 37) that two significant CCs could be obtained. The variables having high loadings in the right hand set of the first CC were personal Effectiveness,

the three dimensions of excellence, and Intrinsic Job Satisfaction. The important variables in the corresponding left hand set were the dimensions of creativity such as Creative Abilities, Analytical Approach to Problem solving, Incubation and Illumination; Optimizing Approach to Problem solving, Associative Approach to Problem solving, Synthesizing Approach to Problem solving, and Analogical Approach to Problem solving; and the dimensions of competence such as Competence Thema, Environment Mastery, Personal Target Realization, and Generalized Competence. Therefore these variables may be thought to be related to Personal Effectiveness, dimensions of excellence, and Intrinsic Job Satisfaction. In the second CC the right hand variate had high loadings corresponding to Intrinsic Job Satisfaction and Satisfaction with Company Policies. This variate represented satisfaction. The corresponding left hand variate was loaded with Job Involvement, and Feedback and Accomplishment; both of them were the dimensions of competence. This suggested that competence may be related with satisfaction. In other words competent people could be more satisfied. Since satisfaction is one of the important outcomes the management may like to think of ways and means of screening in and training up competent people.

Relating personal outcomes with other variables. While it is important to relate creativity and competence with

personal outcomes clearly there would be a number of other variables that could be associated with personal outcomes. This was explored through relating all other variables with personal outcome variables (Table 53). The results showed (Table 53) that all variables, except factors of role overload, two factors of climate (Decentralization and Autonomy in Supervision), and some factors of person's environmental forces (EPCI (PPE & PE); EF (EWE); ARO (EWE & CE); FBA (EWE); PSP (PE)); were important for personal outcome variables as evidenced in the first CC results. The second CC results could be interpreted to mean that Job Involvement, Nurturant Participative Leadership Style, Wholistic Concern, Advancement Opportunity, Expertise Recognition, Decentralization, Autonomy in supervision; Stimulation, Encouragement, and Feedback (in Work Environment); and Organizational Effectiveness could be thought to be conducive to job satisfaction. However, this satisfaction would be in isolation from personal effectiveness and excellence.

A number of supplementary analyses aimed at the detail investigation of the relationships of the personal outcomes with variables under the categories of person's environmental forces, person related variables, organization related variables, and organizational effectiveness were done (Tables 52, 3, 5, 49, 50, 51, 54, 38). Although the exact

nature of the relationship of the variables with personal outcomes did vary across analyses depending on whether one, two, or three categories of variables were used in a particular analyses, the broad pattern of relationship remained somewhat similar to that described above. Of course for details reference may be made to respective tables.

Dynamics of organizational effectiveness. Just as the person level outcomes could be thought of as the culmination of the impact of organizational dynamics on person, similarly the organization level outcomes could be thought of as the culmination of the impact of organizational dynamics on organization. Organizational outcome was included in the form of Organizational Effectiveness in this study. Organizational Effectiveness seems to be an important variable from the organization's point of view. Thus it would be of vital importance to explore the significant predictors of Organizational Effectiveness. The multiple regression analysis was done with Organizational Effectiveness as criterion and all other variables as the predictors. The results (Table 46) suggested that Organizational Effectiveness could be predicted to a considerable extent (49 per cent) by the short listed variables. However, the major contributions were made by Expertise Recognition (a factor of climate), and Wholistic Concern (a factor of theory Z). Other factors contributed to relatively less

extent to the prediction of the criterion, and Nonconventional Ideation, and Personal Target Realization were the negative predictors.

In summary, a work climate where the role incumbents' expertise is recognized and the concern of management is toward a wholistic, that is, total welfare of the employees would be more conducive to Organizational Effectiveness. The factor of Wholistic Concern (yielding the highest beta weight) included items that represented social support and established emotional release mechanisms, job rotation, careful thought before awarding major promotion, high trust toward the organizational members, and emphasis on fostering initiatives and creativity by allowing individual freedom of action. Thus it appears that a work conducive climate with major concern described above are relatively crucial for Organizational Effectiveness. Aspects like Nonconventional Ideation, and Personal Target Realization could be considered as having negative effect in the sense that anything that is disjointed from the tradition and attains only a personal orientation may not be conducive to effectiveness of the organization. Results of regression analysis with Organizational Effectiveness as the criterion and personal, and organizational variables taken separately as predictors also produced somewhat similar results with minor variations, the details can be had from (Tables 47 and 48).

Variations across ownership and levels of hierarchy.

The analysis of variance results showed that the private organizations were more organizationally effective. This could be a matter of concern for public sector management. The reason becomes apparent when one considers the fact that several variables were high in magnitude on an average in private organizations. These variables include Quiet, Bashful, and Reserved, a factor of personal characteristics, Seniority, Wholistic Concern a factor of Theory Z, Advancement Opportunity a factor of job characteristics; Expertise Recognition, Skills Variety factors of climate; Stimulation, Encouragement, and Feedback (in work Environment) a factor of person's environmental forces, Satisfaction with Company Policies, and Intrinsic Job Satisfaction; factors of job satisfaction, and Organizational Effectiveness. Out of these except Quiet, Bashful, and Reserved; factor of personal characteristics, all others were positively correlated to Organizational Effectiveness. Some of them had reasonably high correlation such as Wholistic Concern, Advancement Opportunity, Expertise Recognition, and Satisfaction with Company Policies (Appendix C). The public sector management should do well by concentrating upon organizational effectiveness together with these correlates. For all the variables mentioned above only the main effects were significant in the analysis of variance. Only one variable

that is, Constraint of Change a factor of role overload (something considered to be a part of strain and viewed negatively) was such for which the interaction effect of ownership x hierarchy turned out to be significant. Internal comparison among the cell means of interaction showed that the respondents who were high in hierarchy level and in public organizations, on an average reported experiencing more Constraint of Change than the respondents belonging to the high hierarchy level in private organizations. This again showed that respondents of public sector organizations were experiencing more constraint (of change) than the private sector respondents even if it was true only in case of higher level executives. The items comprising this factor reflected a situation where respondent is constrained may be because it becomes difficult to cope with changes and most jobs are rush jobs. This may be due to the lack of advance planning. These constraints are obviously detrimental for effectiveness which is reflected also in a negative correlation between Constraint of Change and Organizational Effectiveness (Appendix C). Private organizations again scored better in terms of this variate. Thus there is ample reason to believe that private organizations have certain positive features, and the public organizations should make efforts to catch up.

Desirable person: The construct and the dynamics. This work focused on creativity, competence, and excellence under the presumption that they are organizationally relevant variables and individuals possessing them could be assets to the organizations even if in certain situations only. The dimensions of creativity, competence, and excellence were made to form as composite construct termed as desirable person. The construct of desirable person had all but the aspects of job competence comprising it. It was loaded positively with Creative Abilities, Personal Target Realization, Associative Approach to Problem solving, Optimizing Approach to Problem solving, Competence Thema, Analogical Approach to Problem solving, Synthesizing Approach to Problem solving, Quality Conscious Entrepreneurial Excellence, Output Excellence, Analytical Approach to Problem solving, Environmental Mastery; Incubation and Illumination; Nonconventional Ideation, Excellence Recognition (Appendix D). It appeared that person possessing all these qualities could indeed be an asset. In order to see the strength of association of the variables that could be taken to be the predictors of desirable person, multiple regression analyses were done. Important and positive predictors turned out to be Internal Locus of Control; Determined, Persistent, and Self-starter; Seniority; Quiet, Bashful, and Reserved; Task Identity, Wholistic Concern; Courteous, Popular, and

Altruistic; and Stimulation for Creativity (in Extrawork Environment) a factor of person's environmental forces (Table 56).

Out of these the environmental forces related variable that is, Stimulation for Creativity (in Extrawork Environment) could be diagnosed at entry point, the person related variables such as Internal Locus of Control; Determined, Persistent, and Self-starter; Seniority; Quiet, Bashful, and Reserved; Courteous, Popular, and Altruistic; could be diagnosed or enhanced through training, and organization related variables such as Task Identity and Wholistic Concern could be manipulated upon by design in order to have the role incumbents who could be classified as the Desirable Person. It may be noted that separate regression analyses were also done with Desirable Person as the criterion and personal (Table 57), organizational (Table 58), and person's environmental forces' variables (Table 59) as the predictors. The variables that emerged as common to the regression with all variables (described above) were Internal Locus of Control; Determined, Persistent, and Self-starter; courteous, Popular, and Altruistic; Quiet, Bashful, and Reserved; and Seniority (personal variables), Task Identity, (organizational variable), and Stimulation for Creativity in Extrawork Environment (person's environmental forces' variable). Since these factors turned out to be significant variable

wise as well as in the regression equation with all variables, therefore these variables may deserve special attention on the part of the management.

The ownership x hierarchy analysis of variance for desirable person did not yield significant results. This makes sense because theoretically a desirable person may not be a property of specific ownership or hierarchical level.

A relook at the conceptual scheme. A "path analysis" was made by forcing the dimensions pertaining to a particular Sector in one factor by which procedure five forced factors postulated to be representing the five Sectors were obtained. Bivariate variations among the Sectors were decomposed through path analytic procedure. Although it was by no means a rigorous path analysis for model testing, it did suggest that the explicitly made linkages were reasonably good. However, the "causal" variables could predict only 20.37 per cent of variation in organizational outcome and 25.36 per cent variation in personal outcomes. Though not very high these could be said to be of reasonable magnitudes in comparison to the results that are usually obtained in this kind of survey research. Of course, more rigorous schematization of causal linkages and path analytic testing would certainly be warranted for better understanding in terms of a generalizable model.

Using the composite scores of the Sectors b, c, d, and e; interaction effects of Sectors b, c, and d were sought to be seen on personal outcomes that is, Sector e. A hierarchical stepwise multiple regression equation was formed with interaction terms consisting of the composite scores of Sector b, c, and d. The main effects of b, d, and c were significant for the criterion variable (composite score of Sector e). However, the interaction terms were insignificant. This meant that the organizational variables, organizational effectiveness, and personal variables, would have main effects of an additive model type on personal outcomes. Also, the personal variables were more strongly associated with personal outcomes (which was expected) nevertheless, the value of organizational variables, and organizational effectiveness (in that order of strength) for personal outcomes like effectiveness, satisfaction, and excellence, could not be ignored.

Delving beneath the surface: Structure of the second order factors. This study started off with the inclusion of three hundred and forty seven items encompassing twenty three variables which ultimately were reduced to variables that performed the basis for the major portion of analysis. A second order factor analysis (principal factoring and oblique rotation with iterations) was done taking the sixty primary variables as the input variables. Taking the stands

similar to that taken for the identification of "primary" factors eight "second order" factors were obtained. The structure of the factors obtained were as follows.

Structure of second order factor 1. This factor consisted of two primary factors i.e., ASAPS and DPS. It could be thought of as representing a situation where the role incumbents were determined, persistent, and self-starter. They had been involved in associative thinking. This factor could be referred to as Desirable Personal Characteristics.

Structure of second order factor 2. Factor was composed of five primary factors that is, NPLS, WC, ETR, SV, and OE. It was named as the Desirable Characteristics of Organization. The structure of this factor represented a situation where role incumbents had been working in such an organization that was effective. In such an organization the dominant coalition could be said to have nurturant participative leadership style, wholistic concern for their subordinates, the value had been given to the role incumbents having expertise and skills variety.

Structure of second order factor 3. This factor was composed of FO(PPE), IV(PPE), EF(EWE), FBA(EWE), and SC(EWE). It was named as Creativity Fostering Environment off-the-job. The factor characterized a situation where role incumbents had been getting feedback, opportunity, and stimulation for creativity in their extra professional life.

Also they had enjoyed external facilitation, innovation values; and freedom of belief and action in their off the job situation.

Structure of second order factor 4. This factor was labelled as Job Feedback, Accomplishment, and Involvement. The factor consisted of two primary factors i.e., FA and JI represented a situation where role incumbents had received feedback on their work efforts. They did have a sense of accomplishment. These role incumbents also had job Involvement.

Structure of second order factor 5. The factor consisted of D and AS could be thought of as representing a situation where the role incumbents had job autonomy in terms of decentralization and autonomy in supervision. The factor was named as Job Autonomy.

Structure of second order factor 6. This factor represented a situation where role incumbents were working in an organization that was marked by stimulation, encouragement, and feedback; freedom for divergent thought and innovation values. The factor could be labelled as Creativity Fostering Environment on-the-Job.

Structure of second order factor 7. This factor consisted of TC and CTC. It was named Constraint of Change and Time. It could be thought of as representing a

situation where role incumbents experienced role overload in terms of time and change.

Structure of second order factor 8. This factor composed of IJS, and SJSHO named as Satisfaction with Job Situation. The factor structure characterizes a situation where role incumbents were satisfied with their involvement in organizations' decision making and helping others.

The second order factors were conceptualized to occupy places in a conceptual scheme depicted in Figure 3, p. 345. Explorations were made regarding the relationships among second order factors as described in the result section

The dynamics of second order personal outcome. The strength of association of Satisfaction with Job Situation (Sector e, Figure 3) as the criterion with the second order dimensions of person's environmental forces, personal, and organizational factors as the predictors was examined through multiple regression analysis. The results (Table 70) showed that Desirable Characteristics of the Organization, Job Autonomy, and Job Feedback, Accomplishment, and Involvement, were the significant predictors in that order of strength of association. This meant that a situation consisting of the following variables would be conducive to Satisfaction with Job Situation. Organizational Effectiveness, Nurturant Participative Leadership Style, Wholistic Concern, Expertise Recognition, Skills Variety, Decentralization, Autonomy in

Supervision, Job Feedback, Accomplishment, and Involvement. The variables comprised three second order variables, namely DCO, JA, and JFAI and therefore in order to enhance Satisfaction with Job Situation these three variables should be taken care of by the management.

Relating second order personal variables with second order person's environmental forces, organizational and person related outcome. Out of just the second order personal variables the JFAI turned out to be a significant predictor of Satisfaction with Job Situation. JFAI was consisted of Feedback and Accomplishment; and Job Involvement. This second order factor had turned out to be significant predictor also in combination with the second order factors of person's environmental forces, personal, and organizational variables. These are the components of job related competence. Although the shared variance with Satisfaction with Job Situation is only three per cent nevertheless, it would be advisable to arrange for a higher magnitude of this variable Job Feedback, Accomplishment, and Involvement considering its conducive effect on Satisfaction with Job Situation.

Relationship between the second order factors of person's environmental forces and personal factors were examined through CC (Table 67) and the results showed that Creativity Fostering Environment off-the-Job and Creativity Fostering

Environment on-the-Job could be thought to be related to Desirable Personal Characteristics (DPC). The variables comprising DPC were Associative Approach to Problem solving; and Determined, Persistent, and Self-starter. These factors were related to the Creativity Fostering Environment on-the-Job and Creativity Fostering Environment off-the-Job. This brought out the significance of Creativity Fostering Environment as a whole.

Two significant CCs were obtained while relating the second order organizational factors with the second order personal factors. The first CC represented a somewhat negative situation with the presence of Constraint of Change and Time and absence of Job Autonomy. These were related to a situation lacking in Job Feedback, Accomplishment, and Involvement, and marked with Desirable Personal Characteristics. It appeared that the management could do better by decreasing Constraint of Change and Time and increasing Job Autonomy. The second CC reflected a positive situation and therefore management would do better by decreasing CCT and increasing DCO.

Predicting desirable characteristics of organization.

As a completely separate and supplementary analysis the second order factor called the Desirable Characteristics of the Organization was related as the criterion with all other second order factors as the predictors (Table 71) through

multiple regression analysis. The results showed that Satisfaction with Job Situation and Creativity Fostering Environment on-the-Job were the significant predictors. Thus it appears that management could do better by focusing on these second order factors or the first order factors comprising them.

Variations in second order factors across ownership and levels of hierarchy. In order to see the variations on an average of the second order variables across ownership and hierarchy 2 x 3 (ownership x hierarchy) analyses of variance were calculated for all the eight second order factors. Four out of possible eight analysis of variance yielded at least one significant effect. The results showed (Tables 72, and 73) that the private organizations were higher on the Desirable Characteristics of the Organization and also on the Creativity Fostering Environment on-the-Job. Thus the private organizations were higher than the public organizations on these two desirable second order variables. However, public organizations were higher on Job Feedback, Accomplishment, and Involvement also the respondents of high hierarchical level were high on this variable compared to the respondents of low hierarchical level. More Constraint of Change and time was experienced by the middle level respondents of private organization compared to middle level respondents of public organization and high level

respondents of private organizations respectively. The results on the whole suggested that the public organizations need to increase Desirable Characteristics of the Organization and Creativity Fostering Environment on-the-Job. Whereas private organization needed to increase Job Feedback, Accomplishment, and Involvement. Also lower level respondents should have JFAI comparable to high level respondents. Considering the negative nature of Constraint of Change and Time, management in general should do something to keep its level low especially private organizations at middle level and public organizations at high hierarchy levels.

Identifying characteristics found in an "effective" Organization. Attempt was made to locate the variables that are found in high magnitudes on an average in more effective organizations. Out of the ten organizations included in the sample two extreme outliers in terms of the perceived organizational effectiveness measure were identified. Organization 07 was the less and 08 was the more effective organization. Two approaches were adhered to in order to identify the variables that could discriminate between or differentially associated with the less "effective" organization of and the more effective organization 08.

The first approach was to perform a discriminant analysis using 07 and 08 as the criterion groups and all other variable as the classifying variables. The discriminant

analysis resulted in a standardized discriminant function which was largely "negative" in character (Table 75) and as expected the centroid of this function was found to be higher in magnitude in less effective organization 07. If the unstandardized classification function could be taken as an index then the less effective organization 07 could be thought of as marked by the presence of (in greater magnitude) the variables, namely Feedback and Accomplishment; Environment Mastery, Work Inclination and Control; (dimensions of competence), Analytical Approach, to Problem solving, (dimension of Creative thinking process), Obedient, Willing to Accept Judgements, (dimension of personal characteristics), Passion for Distinctiveness, (dimension of need for pioneering) Task structure, Time Constraint (dimension of role overload), Advancement Opportunity (dimension of job characteristics), and Freedom for Divergent Thought in Extrawork Environment (dimension of person's environmental forces).

Correspondingly, the more effective organization 08 could be thought of as marked by the presence of (in greater magnitude) the variables, namely Competence Thema, Personal Target Realization, Specific Competence (which were the dimensions of competence); Analogical Approach to Problem solving (dimension of creative thinking process); Quiet, Bashful, and Reserved; (dimension of personal characteristics),

Seniority (dimension of biographical information),
 Passion for Innovation (dimension of need for pioneering),
 Theory Y, Informal work mechanism (dimension of Theory Z),
 Task identity (dimension of job characteristics); Expertise
 Recognition, Decentralization, Autonomy in Supervision
 (dimension of climate); Innovation values in Professional
 Environment (dimension of Person's environmental forces),
 Personal Effectiveness, and Satisfaction with Company Policies
 (dimension of Job satisfaction).

The second approach to locate the variables "belonging" to less and more "effective" organizations was based on calculating one way univariate analysis of variance with 07 and 08 as the two treatment levels and all other variables as dependent measures (taken separately). The characteristics in terms of the variables found in high magnitudes on an average in the effective organization that is, 08 (see Appendix G for description of 08) were as follows. Work Inclination and Control; (a factor of job competence), Nurturant Participative Leadership Style, Theory Y management practices, Wholistic Concern (a factor of theory Z); all the desirable factors of climate, namely Expertise Recognition, Decentralization, Autonomy in Supervision, Skills Variety; and two of the three factors of job satisfaction, namely Satisfaction with Company Policies; and Satisfaction with

Job Security and Helping Others.

Although it is difficult to establish the causality, that is, it can not be said in definite terms whether OS was effective due to the presence of these factors or these factors were present because the OS was an effective organization. However, if one considers the effectiveness as an outcome variable and others as antecedents or mediating variables then it would seem reasonable enough to make a case for the desirability of the above mentioned variables, that is to say, organizations may do well by arranging for enhancing the magnitude of above variables.

Creativity in thought and action often may be a route to or a necessary ingredient for the flourishing of a business enterprise but it is not conceivable that a successful business would ever be founded or managed with the single end objective of merely being creative. Creativity in business should not be worshipped for itself. An exaggerated emphasis on creativity may sometimes lead to negative consequences, like change of policies and strategies for the sake of change, developing an unthinking preference for the new over the old, and assumption that everything untried is automatically worth trying. It is suggested that one should be creative on the right things in the right areas at the right time to mix the proven and the novel as to attain an optimum, harmonious ensemble (Ramo, 1988).

There could be two aspects of organizational creativity (a) creative managers and (b) management of creativity.

These two aspects seem to be related but they have different connotations. It is not necessary that same person can do the both. It is possible that individually a manager has a thrust for creativity and he or she also has creative potential, but it is also possible that he or she fails to manage his or her own potential into action. There comes the question of management of creative potential. Nevertheless, creative organization being dominated by virtue of new ideas that are implemented could be characterized by change, it is always clear that creative organization looks for new means to achieve old goals. This is known as innovation.

Innovation is the process for change. Management, these days, is highly concerned with responding to change, which is taking place at a high pace. This calls for the effective and innovative problem solving which involves the balance of creative thinking (analogous to divergent thinking) and critical thinking (analogous to convergent thinking). These two types of thinking should be treated as complementary rather than contradictory (Isaksen, 1988).

Creativity and innovation although have their roots in common but can be easily differentiated from one another. Zaleznick (1983) pointed out that innovation is making changes or introducing novelty, such as new customs, manners,

and things. Innovation is largely traditional and grows out of accumulated knowledge existing within a social system, whereas creativity requires a mental act, that frees individual from the boundaries of common knowledge, (p. 38). Creativity involves vertical mode of thinking that is from highly structured and disciplined to loose, associative, and symbolic. Innovation involves horizontal mode of thinking characterized by use of analogies and past experiences.

Concluding remarks. The variables creativity, competence, and excellence although apparently "desirable" may best be thought to be having a contingent nature regarding their effectiveness. Meaning that a particular variable like the present one may or may not be desirable toward effectiveness across situations and time for the simple reason that the organizational dynamics is composed of system of components that may vary in terms of structure, process, requirements, and capabilities. For instance a particular department may require highly creative people (say if it is a department of R & D) whereas another department (say production) may require to have people low on creativity. So in what magnitude a criterion variable would be desirable would depend on situational specifics. However, it would be in the interest of the dominant coalition to identify such variables as would maximize the criterion variable.

Summarizing findings related to creativity. On the basis of the various analyses performed taking creativity as criterion variable the following variables in a way seemed to be responsible for the presence of creativity in a larger magnitude. For example Internal Locus of Control; Determined, Persistent, and Self-starter; Courteous, Popular, and Altruistic; Passion for Innovation, Passion for Distinctiveness, Innovation Values (in Professional Environment); Quiet, Bashful, and Reserved; Freedom for Divergent Thought (in Professional Environment) and Wholistic Concern. These variables occurred as potent variables almost in each analysis. Moreover, some variables occurred thrice or more could also be considered important ones. These were as follows. Theory Y, Innovation Values (in Preprofessional Environment), Need for Self-actualization, Task Structure, Informal Work Mechanism, Task Identity, Expertise Recognition, Skills Variety; Feedback and Opportunity (in Preprofessional Environment), External Facilitation (in Extrawork Environment).

Summarizing findings related to competence. On the basis of various analyses performed taking competence as criterion, the following variables could be thought of as responsible for the larger magnitude of competence such as Stimulation, Encouragement, and Feedback (in Work Environment); Internal Locus of Control, Passion for Innovation, Advancement Opportunity, Autonomy in Supervision; Obedient, Willing to Accept Judgements; Freedom for Divergent Thought

(in Professional Environment), Stimulation for Creativity (in Extrawork Environment); and Task Identity. Some other variables such as Intrinsic Motivation, Need for Self-actualization; Courteous, Popular, and Altruistic; and Innovation values (in Preprofessional Environment) could also have ramifications for the enhancement of competence.

Summarizing findings related to excellence. On the basis of the various analyses performed taking excellence as the criterion, the following variables seemed to be important for the presence of excellence in larger magnitude such as Internal Locus of Control, Need for Self-actualization; Quiet, Bashful, and Reserved; Courteous, Popular, and Altruistic; and Generalized Competence. However, certain other variables were also there that were important but not to extent as the earlier described ones. These variables included Informal Work Mechanism, Advancement Opportunity, Task Identity; Stimulation for Creativity (in extrawork Environment); Creative Abilities; Determined, Persistent, and Self-starter; Passion for Innovation, Passion for Distinctiveness, Wholistic Concern, Skills Variety, Competence Thema, Environment Mastery, Associative Approach to Problem solving, and Synthesizing Approach to Problem solving.

The Summing Up

The study was taken up with a view to understand the structure and dynamics as well as certain antecedents and consequences of the three hithertofore almost unexplored

variables in organizational framework and in Indian setting. These variables were creativity, competence, and excellence. The results indicated that these variables may be the important components having ramifications for a number of person related and possibly also for organization related outcomes.

The study could specify (a) the empirical dimensions of the constructs under study, (b) interrelationships between dimensions of two or more constructs, (c) the variables that could significantly identify the low from high magnitudes of the dimensions of creativity, competence, and excellence, and (d) the "effects" of the type of organizational ownership and the hierarchical position of the executives on the dimensions of variables in the study.

The salience of the variables or the dimensions used in the study was, to some extent, also evidenced by the prediction of a generated concept of the desirable person.

Some of the highlights of the study could include the following. Creativity, competence, and excellence could be treated as variables of import in organizational dynamics. They do seem to have significant consequences at the individual level and presumably also at the organizational level.

The constructs of creativity, competence, and excellence may gainfully be understood in conjugation with the other variables in the study.

In addition to process variables, the structural variables also seemed to be important; therefore intervention attempts should take into account the differences in terms of ownership of the organizations and the hierarchical levels.

Implications of the Study

The present investigator feels that the study has been successful in showing the importance of creativity, competence, and excellence in the organizational dynamics even though traditionally creativity might mean going off the set track and excellence may be construed as the rate busting from the point of the view of the organizational designers as well as some of the organizational members. The study could also specify the nature of precise relationship among the various dimensions of creativity, competence, and excellence. Therefore this knowledge may be gainfully used if contingencies are taken into account. That is to say that in each and every situation and for each and every role incumbent, exceptionally high creativity, competence, and excellence may not be desirable and therefore if one knows the desirability, a suitable screening can be made to have matching magnitude of creativity, competence, and excellence according to contingency requirements.

Several variables were identified that could successfully discriminate between high and low levels of dimensions of creativity, competence, and excellence which could prove to

be rather useful to the personnel manager for diagnostic purposes in selection, placement, promotion, or dismissal of a role incumbent.

It needs to be pointed out that owing to rich data base and intricate results, the findings of theoretical importance are so numerous that dealing with each of them once again at this point would amount to a voluminous repetition of the facts and their relevance, that have already been enunciated at appropriate places in the discussion section. It is suggested that discussion (and preferably also the results) should be reviewed with an eye to the theoretical implications of the study.

Limitations of the Study

A critical examination of the method and interpretations is likely to reveal certain limitations of the study, especially for generalizing the findings. Some of the obvious limitations are as follows.

1. The sequencing of variables as antecedents and consequences was done more for conceptual clarity in classification rather than for actual. The investigator was aware of this, but "... a sequential chain of cause and effect (which) is inadequate to stimulate the true complexities of ... the social system which we are typically trying to describe. Such simple a - affects b - hypothesis fails to catch the complexities of parallel processing, bidirectional

causality, and reverberating feedback that characterizes both cognitive and social organization " (McGuire, 1976, p. 37).

2. No "objective criterion" was met for the measurement of certain variables such as performance and effectiveness as well as creativity, competence, and excellence.

3. A perusal of Table 1 would reveal the heterogeneity of the organizational and respondents' sampling something which is traditionally supposed to be less than perfect. The investigator was perceptive of this fact. However, there were two considerations for going ahead with this kind of sample. Firstly, the practical constraints under which this study was being conducted made it difficult to homogenize the sample (e.g., in terms of product, mix, size etc.). Secondly the heterogeneity of the sample might be thought to be a positive feature rather than a drawback sending itself to the wider generalizability of the findings. Such a stand has been taken elsewhere also (Khandwalla, 1983, 1985; Singh, 1986). While the generalizability may still remain arguable, it has to be admitted that the sampling was done the way it was done more due to practical limitations in truly random sampling. The sample of the study imposed certain limitations toward wider generalizability of the findings for which a more comprehensive and stringent sampling procedure could have been worthwhile.

4. This study started off with the inclusion of three hundred and forty seven items (including additional measures of competence) encompassing twenty three variables which ultimately were reduced to sixty variables that formed the base for the major portion of analyses. Though there could be some inherent difficulties attached to any specific approach to a research problem, the approach taken in this study may reveal certain features that could have been "improved" upon. For instance instead of using a priori conceptualization of a construct, writing items to fit into that construct, and subsequently subjecting that very scale only to factor analysis; would naturally yield the item configurations contained in and constrained by the structure of that very scale treated in isolation of the other variable or constructs. There is a possibility that the latter could have interacted with the former construct. There would have been at least a theoretical possibility of getting a factor structure closure to the real life setting if some alternative could be evolved. An alternative approach could have been to factor analyse all of the three hundred and forty five items taking them together and then identify the factors or the dimensions emerging out as representatives of the various constructs that could be a representation of real life variables, however, the constraints of analytical tools and techniques under which the present researcher had to work,

did not allow to go in for such an approach. Further, it is acknowledged that considering the number of variables ultimately included in the study, the sample size may be considered as somewhat small. Traditionally, one would prefer to have about thirty cases for each of the variables in a research where analytical techniques such as those used in this study are used. Thus a substantially larger sample size would have been warranted. Again due to the constraints, it could not be possible. An attempt, however, was made to rescue the situation wherever possible by using methods and criteria of variable selection so as to keep the number of included variables to a minimum. Also comparable analyses were done using "second order" factors which were considerably fewer in number. Nevertheless, a larger sample size would have been much better.

Suggestions for Future Research

The results obtained and limitations realized during the course of accomplishment of this study were compelling enough to make one think for an extension of this research using alternative approaches and considerations. Some of the possible ones could be as follows.

1. Sequential causal ordering of the constructs for model testing may be better understood using path analytic techniques, including each and every variable and dimensions thereof in the model. Thus the study may be extended on the

existing data base may further be explored using an all encompassing path analysis.

2. Similar projects may be taken up in other types of organizations with differing products mix, service organizations, common - weal organizations, and mutual benefit associations.

3. Although it is a difficult proposition in organizational research, a better sampling procedure that would come closest to random sampling, and a considerably larger sample size would be highly desirable.

4. The study could be done in the longitudinal design on time series data.

5. Research using active manipulation of the variables of creativity, competence, and excellence in the field setting may yield substantially more useful data.

6. The objective or hard criteria could be sought and employed for validation of the thrust variables.

7. Interactive effects of relevant variables could be examined on thrust variables and their respective outcomes could be explored. The variables in this study need to be explored in light of the relevant contingency variables such as technology and environment, among others.

8. Last but not the least, it would be recalled that excellence, one of the thrust variables in this study, was conceptualized as going beyond effectiveness. Owing to constraints, this study could not "concretely" examine whether being high on excellence dimensions did necessarily mean moving ahead of the effectiveness level. Through interventions or longitudinal or time series type data; the issue would need to be settled in concrete terms for a proper understanding of the construct of excellence and its consequences.

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Appendix A

Measures Used in the Study

The following response categories were used for all the forms in the questionnaire except where specifically mentioned otherwise.

To almost no extent	... 1.
To a small extent	... 2.
To some extent	... 3.
To a great extent	... 4.
To very great extent	... 5.

The respondents were required to respond by writing the appropriate number representing the above categories that would describe the respondent's position most closely. The numbers were to be written on a line drawn in the left hand margin adjacent to the item number.

Form 1: Creative Thinking Process Questionnaire

When someone is faced with a problem, (s)he tries to solve it by some way or the other. Given below are some ways of solving a problem. Please indicate to what extent you apply them by assigning the appropriate number.

1. I factor the problem into sub-problems.
2. I seek relationship among components of the problem.
3. Incubation (incubation is the letting go of the problem by the conscious mind and allowing it to ferment below the level of consciousness.)

4. Illumination (illumination is being struck by a solution ineureka - like experience.

5. I substitute parts of the solution by more useful parts.

6. I add useful components to the solution.

7. I delete unnecessary ingredients of the solution.

8. I modify the elements of the solution.

9. I search for solutions that are opposite to the ones that are conventionally advanced.

10. I distort or ignore problem constraints to facilitate the conceiving of far out possibilities.

11. I develop a working definition of the problem.

12. I list objects and procedures.

13. I use associative thinking to bring to consciousness more and more far out alternatives.

14. I high light contradictory elements in the problem situation or take extreme situations and try to explain them.

15. I use broad conceptual model to organize the information.

16. I build a model of the situation, and manipulate its crucial variables to see outcomes, as in a simulation.

17. I make use of symbols, categories, stereotyping, aphorisms, metaphors, and titles.

18. I evaluate solutions to reach further rather than for negative self-evaluations..

19. I restructure the original problem by reinterpreting the constraints.

20. I allow the mind to synthesize imaginary solutions.

21. I question the basic assumption on which the current approach rests.

22. I get involved with the problem by magnifying the negative consequences of not finding the solution or by empathising, or experiencing fully the magnitude of the problem.

23. I verbalise the problem.

24. I list components of the problem.

25. I familiarise myself with the problem through analogies with known situations.

26. I use charts and diagrams.

27. I prefer symbolic representation of components and their relationships.

28. I define issues, constraints, variables.

29. I impose constraints on the problem for example by making assumption, by establishing evaluation criteria.

30. I select out alternatives by evaluating alternatives.

31. I work backwards step by step from an ideal solution to current reality.

32. I put in one place the various strands of thought concerning a problem.

33. I incubate (sleep over a problem).

34. I refine the solution.

35. I alter the relation between the components of the solution.

36. I formalise the criteria of evaluating the solution.

37. I list the steps by which I can go from the current situation to a potential solution.

38. Preparation (Preparation involves the investigation of the problem in all directions, including a full understanding of what the problem is, the constraints within which it has to be solved, detailed analysis using known procedures etc.)

39. Verification (verification is the evaluation or verification of the solution, its refinement, the working out of its implications etc.).

Form 2: Creative Abilities Questionnaire

Please indicate to what extent do you possess the following abilities.

40. Ability to come up with a number of solutions to a given problem.

41. Ability to provide a large variety of solutions, to a given problem.

42. Ability to come up with unusual but appropriate responses.

43. Ability to spot the uncommon to be sensitive to feelings, ability to sense problems.

44. Ability to grasp the causes and visualise the consequences.

45. Ability to elaborate on a theme.

46. Ability to restructure problems.

Form 3: Perceived Job Competence Questionnaire

47. This job offers me a chance to test myself and my abilities.

48. This type of work offers subjective rewards:
The job is valuable to me for no other reason than I like to do it.

49. Doing this job well is a reward in itself.

50. I can get so wrapped up in my work that I forget what time it is and even where I am.

51. Mastering this job meant a lot to me.

52. I go home the same way I arrive in the morning feeling I have not accomplished a whole lot. (R)

53. A difficult problem in this job is not knowing the results of one's action. (R)

54. No one knows this job better than I do.

55. If anyone here can find the answer, I am the one.

56. My talents, or where I can concentrate my attention best are found in areas not related to this job. (R)

57. If the work were only more interesting I would be motivated to perform better. (R)

58. I meet my own personal expectations for experties in doing this job.

59. I would make a fine model for an apprentice to emulate in order to learn the skills he would need to succeed.

60. This job is manageable and any problems tend to be optimally solved.

61. Even though the work here could be rewarding, I am frustrated and find motivation continuing only because of my pay check.

62. I do not know why it is but sometimes when I am supposed to be in control I feel more like the one being manipulated.

63. Problems here are easy to solve once you understand the various consequences of your actions, a skill I have acquired.

64. Considering the time spent on this job I feel thoroughly familiar with my tasks.

65. I honestly believe I have all the skills necessary to perform this task well.

66. I do not know as much as my predecessor did concerning this job.

67. Unfortunately, an individual's worth often passes unrecognized no matter how he tries.

68. Sometimes I feel like I am not getting anything done.

69. This job makes me tense and anxious.

Form 4: Excellence Questionnaire

70. I have learned from the people I serve and I am a great supporter of unparalleled quality, services, and reliability, things that work and last.

71. I greatly value and cherish autonomy and liberty of entrepreneurship (undertaking something that needs courage or that offers difficulty).

72. I think its the responsibility of the organization to encourage my practical risk taking and support good tries of mine.

Put the number of your choice on a small line to the left of each statement.

Less than 20% of people in the organization ...	1.
Less than 40%	" " ... 2.
Less than 60%	" " ... 3.
Less than 80%	" " ... 4.
Almost 100%	" " ... 5.

76. I have been able to show my excellence to people qualified to evaluate my worth.

77. I have been able to show my excellence in the quality of work/service I generally engage in.

78. I have been able to show my excellence in the quantity of work/service I generally engage in.

79. I have great respect for the individuals as individuals (because I believe that they are the root source of quality and productivity gain).

80. My disposition toward work may be said to have a bias for action, (i.e. I have a tendency to identify the problems, come up with an answer and implement it also, I like to experiment with novel ideas.

81. I think that I should be treated as source of ideas rather than a manual worker.

82. I maintain regular contacts and interaction with my juniors and colleagues and my assessment of them would generally be guided by factors like quality, service, neatness, and values.

83. Though I value excellence in performance, I would be reluctant to try my hands on the assignments/jobs that are completely unknown to me.

84. My life style could be described as simultaneously having loose tight properties i.e., neither too rigid nor flexible to the extent of carelessness.

35. An important characteristics of my personality is my innovativeness that often reflects in the things I do or in the characteristics ways I do them.

Form 5: Person's Environmental Forces Questionnaire

The following items pertain to the characteristics of the environment at different stages of your life such as childhood, school, social, and work environment etc. Please read the item and indicate as to what extent a specific attribute is present or absent in the environment at various stages of your life by putting the appropriate number representing the alternatives given below in the respective columns.

36. Opportunity to master techniques relevant to my interests in childhood environment.

37. Availability of detailed feedback on my creative efforts in school environment.

38. Opportunity to master techniques relevant to my interests in school environment.

39. Degree of stimulation (there is always something new to do, experience, or know, one is called upon to respond to new tasks and challenges) in present work environment.

90. Encouragement and reward to my creativity in present work environment.

91. Availability of detailed feedback on my creative efforts in present work environment.

92. Esteem for pioneers, creators, and innovators in childhood environment.
93. Esteem for pioneers, creators, and innovators in school environment.
94. Esteem for pioneers, creators, and innovators in present social environment.
95. Esteem for pioneers, creators, and innovators in present work environment.
96. Penalty for shabby performance in activities of your own choice in childhood environment.
97. Commitment of high status admired figures to creativity and innovation and their communication of expectations to me in childhood environment.
98. Emphasis without being committed themselves of high status admired figures to creativity and their communications of expectations to me in childhood environment.
99. Commitment of high status admired figures to creativity and innovation and their communication of expectations to me in school environment.
100. Emphasis without being committed themselves of high status admired figures to creativity and their communications of expectations to me in school environment.
101. Availability of physical and financial facilities to pursue interests and hobbies in childhood environment.

102. Availability of physical and financial facilities to pursue interests and hobbies in school environment.

103. Availability of physical and financial facilities to pursue interests and hobbies in present social environment.

104. Absence of premature criticism of my creative ideas in school environment.

105. Absence of premature criticism of my creative ideas in present social environment.

106. Absence of premature criticism of my creative ideas in present work environment.

107. Freedom of belief and action in childhood environment.

108. Freedom of belief and action in school environment.

109. Freedom of belief and action in present social environment.

110. Degree of stimulation (i.e., there is always something new to do, experience, or know, one is called upon to respond to new tasks and challenges) in present social environment.

111. Penalty for shabby performance in activities of your own choice in present social environment.

112. Penalty for shabby performance in activities of your own choice in present work environment.

113. Availability of diverse viewpoints and freedom to hold any divergent view in present social environment.

114. Availability of diverse viewpoints and freedom to hold any divergent view in present work environment.

115. Degree of stimulation (i.e., there is always something new to do, experience, or know, one is called upon to respond to new tasks and challenges) in childhood environment.

116. Encouragement and reward to my creativity in childhood environment.

117. Degree of stimulation (i.e., there is always something to do, experience, or know, one is called upon to respond to new tasks and challenges in school environment.

118. Encouragement and reward to my creativity in school environment.

119. Commitment of high status admired figures to creativity and innovation and their communication of expectations to me in present social environment.

120. Emphasis without being committed themselves of high status admired figures to creativity and their communications of expectations to me in present social environment.

121. Commitment of high status admired figures to creativity and innovation and their communication of expectations to me in present work environment.

122. Emphasis without being committed themselves of high status admired figures to creativity and their communication of expectations to me in present work environment.

123. Absence of premature criticism of my creative ideas in childhood environment.

124. Availability of detailed feedback on my creative efforts in childhood environment.

125. Availability of diverse viewpoints and freedom to hold any divergent view in childhood environment.

126. Availability of diverse viewpoints and freedom to hold any divergent view in school environment.

127. Penalty for shabby performance in activities of your own choice in school environment.

128. Encouragement and reward to my creativity in present social environment.

129. Availability of detailed feedback on my creative efforts in present social environment.

130. Opportunity to master techniques relevant to my interests in present social environment.

131. Opportunity to master techniques relevant to my interests in present work environment.

132. Freedom of belief and action in present work environment.

133. Availability of physical and financial facilities to pursue my interests and hobbies in present work environment.

Form 6: Biographical Information Questionnaire

134. Length of service in this organization (in years) -----.
135. Length of service in the present position -----.
136. Number of positions above your position in
this organization (hierarchy of position) -----.
137. Your age (in years) -----.
138. Education (a) Last academic degree _____.
- (b) Professional degree _____.
139. Number of promotions in this organization _____.
140. Number of promotions in terms of higher position
so far since the very first job you got (including the
first job) _____.
141. Total length of service _____.
142. Number of contributions made, patents, rewards,
merit, certificates etc. Please specify
- Patents _____
- Rewards _____
- Honours _____
- Certificates _____
- Any other _____
143. Approximate gross salary per annum & basic per
month.
144. Approximate no. of dependents (nonearning family
member) _____.
145. Nature of job (technical or nontechnical) _____.

Form 7: Intrinsic Motivation Questionnaire

146. I take pride in doing my job as well as I can.

147. I feel unhappy when my work is not up to my usual standard.

148. I like to look back on the day's work with a sense of a job well done.

149. I try to think of ways of doing my job effectively.

150. I feel a sense of personal satisfaction when I do my job well.

151. My opinion of myself goes down when I do my job badly.

Form 8: Locus of Control Questionnaire

152. When I make plans ahead I usually get to carry out things the way I expected.

153. I feel pretty sure my life would work out the way I want it to.

154. I would say life is too much a matter of luck to plan ahead very far.

155. I feel that the problems of life are sometimes too big for me to live my life pretty much the way I want to.

Form 9: Need for Pioneering Questionnaire

156. I strongly prefer a hobby that is quite novel and stretches my imagination.

157. One of my greatest ambitions for my child (present or prospective) is, that the child should grow up to do something novel and imaginative.

158. At work I would very much like to be regarded as a person who often comes up with original ideas and opportunities.

159. With my spouse (present or prospective), I prefer to be a partner, in some exciting, novel line of activity.

160. On a holiday I prefer to learn or do something new or distinctive.

161. If I am to be given a gift of a book for my birthday, I would greatly prefer it to be a book of biographies of original individuals and discoverers.

162. At a party, I prefer to meet individuals with unusual interests and points of view.

163. My main aim in life is to do something rather unique.

164. If I had a choice of dream, I would prefer a dream in which I make a fundamental discovery.

165. At home I greatly prefer to be a the "idea man" always thinking up new or better ways of doing things.

Form 10: Need for Self-Actualization Questionnaire

166. I strongly prefer a hobby in which I feel totally absorbed.

167. One of my greatest ambitions for my child (present or prospective) is that the child should grow up to have a deep sense of self-fulfilment.

168. At work I would very much like to be regarded as a person who cares more for job satisfaction than for money or position.

169. With my spouse (present or prospective), I prefer to seek a relationship in which each supports the other at realising our individual potentialities.

170. If I am to be given a gift of a book for my birthday, I would greatly prefer it to be a book about people who followed their inclinations even at the cost of money or position.

171. On a holiday I prefer to do things that expand my awareness of myself and the world I live in.

172. At a party, I prefer very much to meet individuals who are spontaneous and say what they genuinely feel.

173. My aim in life is to develop fully all my potentialities.

174. If I had a choice of dream, I would prefer a dream in which I re-experience vividly the moments of my greatest joys and sorrows.

175. At home I greatly prefer to follow my own path of self-development even when it meets with the criticism of family members.

Form 11: Personal Characteristics Questionnaire

I am:

- 176. a self-starter.
- 177. persistent
- 178. determined
- 179. reserved
- 180. bashful shy
- 181. quiet
- 182. courteous
- 183. popular (well liked by others)
- 184. altruistic (helpful in nature)
- 185. always asking questions
- 186. stubborn
- 187. obedient
- 188. willing to accept judgements
- 189. visionary
- 190. haughty (arrogant, having or showing a high opinion of oneself) and self-satisfied.
- 191. courageous in convictions
- 192. independent in thinking
- 193. unwilling to accept say so
- 194. willing to take risk.
- 195. adventurous
- 196. preoccupied with tasks.
- 197. confident
- 198. assertive

- 199. curious
- 200. intuitive
- 201. emotionally sensitive
- 202. fond of striving distant goals
- 203. Independent in judgement
- 204. fond of attempting difficult tasks
- 205. timid
- 206. domineering
- 207. negativistic
- 208. physically strong
- 209. talkative
- 210. sophisticated
- 211. fond of doing work on time.

Form 12: Self-Esteem Questionnaire

Put the number which most accurately describes your stand.

- 212. I know how to do what is expected of me.
- 213. There are several things I can point to as being special skills or unique abilities.
- 214. I think I have a good sense of who I am and what my life is about, I can be realistic about my limits and my capabilities.
- 215. I think luck or fate is very real.
- 216. I make a written list of personal goals.

217. When I compare who I am with who I hoped to be at this stage in my life and/or career, I feel discouraged.

218. I do something for someone else (out group member) which no one knows.

219. I believe that almost anyone could do my job just as well as I. There's nothing that unique about my contribution. (R)

220. I believe that I am not meeting my life's ambitions because of factors outside my control. (R)

221. I am fearful about making mistakes and get the feeling that one wrong move will mean the loss of prestige I have gained in my work so far in my career. (R)

222. The best part of my job is that I know how to do it. I would be concerned about doing a job with more responsibility because I would not want to try something and fail at it. (R)

223. I try something new that required different skills or involved activities that are unfamiliar to me.

224. Most often I am able to accomplish a personal goal or objective.

225. I believe that if I really try and have the right training there isn't anything I can't do.

226. People who work hard get what they want, others who don't, complain.

Form 13: Climate Questionnaire

To what extent each item is true in case of your organization.

227. Achieving goals or targets set, or excelling them, is the main concern here.

223. Relevant information is made available to all who need it and can use such information for achieving high performance.

229. Those who can achieve results are highly trusted.

230. The main concern of the managers here is to develop specialized competence and expertise.

231. Knowledge and expertise are recognized and highly rewarded here.

232. The specialists and experts are highly trusted here.

233. People have to ask their superiors before they do almost any thing here in this organization. (R)

234. Even small matters have to be referred to someone higher up for final answer. (R)

235. There can be little action in anyone's job until a superior approves it. (R)

236. Any decision made by us has to have supervisor's approval. (R)

237. Instructions are issued by the bosses and are expected to be carried out without delay or protest. (R)

238. Managers usually refer the problems to and look for solutions from their seniors. (R)

239. Supervision here is usually to check mistakes. (R)

240. Most people who are doing a particular job are capable of doing many other jobs equally well in this organization.

241. During his probation period an employee is made to gain experience on a variety of jobs/desks/counters/duties before he occupies the position he primarily had been appointed for.

242. Most of us have enough inputs to handle a different job if a situation arises.

243. Managers here have high concern for one another and help each other spontaneously when such help is needed.

244. In resolving conflicts, appeal is made to principles and organizational ideals and the largest good of the organization.

245. The main concern of managers here is to help each other, develop greater skills for advancement of the organization.

246. Trusting and friendly relations are highly valued here.

247. The ability to get along well with others is highly rewarded here.

248. When confronted by a risky situation, managers here seek their friends for guidance and support.

249. The main concern of the managers here is to develop generalized competence and generalized expertise.

250. Knowledge and expertise in a wider variety of skills and job aspects are highly rewarded here.

251. Those who can handle a wider variety of job aspects are highly trusted here.

252. It is generally believed that a person should be able to handle most of the job aspects even if he is primarily assigned a specialists job.

253. Consolidating ones own personal position and influence seems to be the main concern here.

254. In a conflict situation those who are stronger, force their point of view on those who are weaker. (R)

255. Managers here are mainly concerned about following the laid down rules and procedures. (R)

256. Employees here prefer that their mistakes should usually be checked. (R)

Form 14: Job Characteristics Questionnaire

To what extent the following are available in your job.

257. The freedom to choose your method of working.

258. The recognition you get for good work.

259. Your opportunity to use your abilities.

260. The feeling of doing something which is not trivial but really worthwhile.

- 261. Doing a whole and complete piece of work.
- 262. Your chance of promotion.
- 263. The amount of responsibility you are given.
- 264. Being able to judge your work performance, right away, when actually doing the job.
- 265. The amount of variety in your job.
- 266. The attention paid to suggestions you make.

Form 15: Leadership Styles Questionnaire

The following statements are about the behavior of your head of the unit (i.e., Suptd./Chief Supt.)

- 267. He maintains partnership in the group.
- 268. He helps his subordinates in this career planning.
- 269. He helps his subordinates to grow up and assume greater responsibility.
- 270. He makes his subordinates feel free even to disagree with him.
- 271. He provides all information to his subordinates and let them jointly find the solution of a problem.
- 272. He helps his subordinates even in the family matters.
- 273. He interacts with his subordinates as if they are equal.
- 274. He goes by the joint decision of his group.
- 275. He treats all group members as his equal.
- 276. He believes that subordinates acquire sense of a good leader responsibility under the care and guidance of a good leader.

277. He openly shows affection to those subordinates who work hard.

278. He gives as much responsibility as his subordinates can handle.

279. He grants full freedom and autonomy to his subordinates so that they can work hard.

280. He encourages free and frank interaction among members.

281. He believes that all of us have more or less equal potentialities.

282. If the subordinates need help, he helps as much as he can.

283. He feels responsible for the wellbeing of his subordinates.

284. He is a friendly type.

285. He finds time to listen to the personal problems of the subordinates.

286. He has affection for his subordinates.

Form 16: Role Clarity Questionnaire

287. I am clear what others expect of me on my job.

288. On my job, whatever situation arises, there are established procedures for handling it.

289. I get enough facts and information to work my best.

290. I can predict what others will expect of me tomorrow in my job.

Form 17: Role Over Load Questionnaire

291. I do not get enough time to finish my assignments.
292. I can give better performance if some more time is available at my discretion.
293. Speed of technical change creates problem in my job.
294. A large proportion of my job is a rush job.
295. I do not have sufficient number of people to carryout the assignments.

Form 18: Task Structure Questionnaire

The task/job I am supposed to accomplish is one in which:

296. The degree to which the correctness of the decisions can be demonstrated.
297. The degree to which the requirements of the task are clearly stated.
298. The degree to which the goal can be reached by a variety of procedures. (R)
299. The degree to which there is more than one correct solution. (R)

Form 19: Theory Y Questionnaire

I think that the management believes that:

300. People do not inherently dislike work.
301. People do not like rigid control and threats if the organization's goals are to be met.
302. Under proper conditions, people do not avoid responsibility.

303. People want security but also have other needs such as self-actualization and self-esteem.

Form 20: Theory Z Questionnaire

I think that:

304. There exists a set of mechanisms in the organization to provide for the social support and emotional release necessary for emotional equilibrium.

305. Most people do not remain within one functioning specialty but rather rotate between areas so that they become familiar with both the people and the problems across the company.

306. A great deal of careful thought and inspection goes on before anyone receives a major promotion.

307. The management may be said to have a great amount of trust in the organizational members.

308. One of the objectives of this organization is to foster initiatives and creativity by allowing the individual great freedom of action in attaining objectives well.

309. For getting things done it is informal contacts rather than formal requests or order that is used here.

310. Compared to the formal, the informal mechanisms of control are used such as self-motivation, peer pressure, work values, informal contacts, and mutual understanding.

311. In this organization individual responsibility is important. Its the individual and not any group that would be credited or discredited for good and bad performance.

312. The organization has facilities and opportunities enough to retain me in its service until the time of my retirement.

313. Termination of an employee for anything less than a major criminal offence in this organization is less likely.

314. The decision making process is such where almost everyone honestly understands everyone else's point of view and irrespective of the agreement or disagreement with the consensual decision almost every one supports the final decision.

315. The understanding between an employee and the employer is that the connection between them involves only those activities directly connected with the completion of specific job.

316. People tend to take a broad interest in each other and it is common to find supervisors who feel that it is part of their job to know about their subordinates.

317. Although explicit performance measures (make profits or sales or the number of assignments fulfilled) are important, it is rare that anyone's career "made" or "broken" on those numbers.

Form 21: Organizational Effectiveness Questionnaire

Please rate your organization's effectiveness by selecting an appropriate number.

Not effective at all	... 1.
Not too effective	... 2.
Fairly effective	... 3.
Very effective	... 4.
Extremely effective	... 5.

How effective is your organization as a whole at.

318. Running smoothly with minimum of confusion.

319. Getting things done it is supposed to do.

320. Helping people who work get their job done

321. Coping with unexpected problems.

Form 22: Job Satisfaction Questionnaire

Please indicate: How satisfied are you with the following statements by using appropriate number.

Very dissatisfied	... 1.
Dissatisfied	... 2.
Neutral	... 3.
Satisfied	... 4.
Very satisfied	... 5.

322. Amount of responsibility you are given.

- 323. Your rate of pay.
- 324. Your chance of promotion.
- 325. The way your firm is managed
- 326. Opportunity to make decisions.
- 327. Opportunity to achieve something worthwhile.
- 328. Your job security.
- 329. Opportunity to help others with personal problems
at work.
- 330. Physical work conditions.
- 331. The freedom to choose your own method of working.
- 332. Your fellow workers.
- 333. The recognition you get from good work.
- 334. Your immediate boss.
- 335. Opportunity to use your abilities.
- 336. Relations of management and workers.
- 337. The attention paid to suggestions you make.
- 338. Your hours of work.
- 339. The amount of variety in your job.
- 340. Chances to learn new things.
- 341. Power and prestige in the job.

Form 23: Personal Effectiveness Questionnaire

How effective are you at:

- 342. Getting things done on the job.
- 343. Helping you get things done on the job.
- 344. Arranging for work to go as smoothly as possible
- 345. Coping with unexpected problems.

Appendix B

Summary of Factor Analysis Results

Table B1

Factor Pattern of Creative Thinking Process Questionnaire

Item no.	Factors and loadings								
	1	2	3	4	5	6	7	8 ^u	9 ^u
1	.74	.07	.04	.00	-.00	.03	-.01	-.10	.01
2	.68	.07	.11	.07	.08	.03	.00	-.01	.01
3	.07	.69	-.01	-.12	-.02	-.19	-.08	-.08	.05
4	-.03	.63	.01	.04	.01	.22	.00	.01	-.11
5	-.01	.08	.55	.09	.03	.14	-.11	.29	.02
6	.01	-.07	.77	-.01	-.00	.04	-.08	.11	.01
7	.13	.02	.63	.05	.13	.02	.13	-.15	.01
8	.05	.02	.71	-.12	.04	-.07	.01	-.07	-.10
9	-.05	.03	.01	-.56	.17	.05	-.04	-.02	-.12
10	-.18	.16	.09	-.58	.03	-.08	-.12	-.07	.07
11	.10	-.07	.06	-.03	.66	.08	-.01	-.11	.04
12	-.04	.06	.06	.06	.89	-.12	-.08	-.03	.04
13	-.04	.01	.04	-.09	.61	.04	-.08	.27	-.05
14	.03	-.00	-.01	-.09	-.01	.70	-.02	-.02	.04
15	-.02	.01	.17	.02	-.03	.65	-.17	.05	-.05
16	.02	.03	.01	-.02	.14	.11	-.61	-.03	-.08
17	.05	.14	.05	-.04	.07	.04	-.65	.01	.06

(table continues)

Factors and loadings

Item no.	1	2	3	4	5	6	7	8 ^u	9 ^u
Unclassified items									
18	.06	.09	.00	-.06	.31	.05	.05	.28	-.17
19	.07	-.02	.04	-.31	.25	.16	-.00	.29	-.04
20	.08	-.01	.01	-.46	.13	.25	-.02	.10	.08
21	.18	-.09	-.06	-.32	.29	.18	-.05	-.12	-.18
22	.06	.03	-.00	-.40	.09	.10	-.21	.02	-.01
23	.26	.12	.05	.44	-.03	.18	.14	.04	.09
24	.24	.11	-.03	-.21	.22	.05	-.09	.11	-.10
25	.31	-.05	.12	-.03	.07	.09	.03	.29	-.12
26	.41	.04	-.04	.12	.08	.09	-.39	-.07	.13
27	.49	-.10	.09	-.04	-.01	.04	-.28	.16	-.02
28	.41	.03	.12	.02	.15	-.01	-.12	.17	-.13
29	.20	.07	.10	.19	-.05	.05	-.17	.18	-.30
30	.37	.00	.03	-.19	.07	-.01	-.10	.10	-.28
31	.23	-.03	.05	-.18	.08	-.04	-.32	.03	-.17
32	.04	.09	.13	-.08	.18	.20	-.27	-.09	-.06
33	.08	.35	-.03	-.15	-.01	.05	-.14	-.25	.39
34	-.03	.04	.44	.01	.07	.25	-.09	.28	.10
35	.05	.02	.39	-.42	-.06	.05	-.02	-.23	-.13

(table continues)

Table B1 (continued)

Factors and loadings									
Item no.	1	2	3	4	5	6	7	8 ^u	9 ^u
Unclassified items									
36	.01	.03	.22	-.20	.05	.16	-.17	-.30	-.38
37	-.03	.13	.31	.02	.15	.00	-.21	-.12	-.40
38	.19	.11	.12	.09	.14	-.00	.05	.12	-.34
39	.04	.43	.05	.18	.10	.30	.09	-.08	-.32
EV WIT	12.39	2.44	1.82	1.63	1.49	1.32	1.20	1.07	1.01
PV WIT	31.8	6.3	4.7	4.2	3.8	3.4	3.1	2.7	2.6
EV IT	11.92	1.93	1.33	1.13	1.08	0.35	0.74	0.61	0.65
PV IT	59.0	9.6	6.8	5.6	5.3	4.2	3.7	3.0	2.7

EV WIT = Eigen value without iteration.

PV WIT = Per cent of variance without iteration.

EV IT = Eigen value with iterations.

PV IT = Per cent of variance with iterations.

u = Unused Factor due to high loading of only one item and other reasons mentioned on page 114 and 115.

Table B2

Factor Pattern of Creative Abilities Questionnaire

Item no.	Factor and loadings
	1
40	.64
41	.74
42	.60
43	.63
44	.63
45	.73
46	.66
Eigen value WIT	3.63
Per cent of variance WIT	51.8
Eigen value IT	3.1
Per cent of variance IT	100.0

WIT = without iterations. IT = with iterations.

Table P3

Factor Pattern of Perceived Job Competence Questionnaire

Item no.	Factors and loadings					
	1	2	3	4	5	6
47	.63	-.10	.17	.14	-.08	.12
43	.52	-.02	.15	.06	-.07	-.06
49	.73	-.02	-.07	.10	-.01	.05
50	.50	-.02	.09	-.12	-.04	-.02
51	.72	.05	-.09	-.04	-.09	-.09
52	-.06	.61	.01	.11	-.06	-.05
53	-.05	.69	-.06	.17	-.07	-.01
54	-.09	.02	.64	-.00	-.08	-.12
55	.04	-.03	.83	-.03	.07	.08
56	.21	.23	.06	.50	.04	.21
57	.03	.09	-.07	.54	-.03	-.03
58	.22	-.01	.14	.16	-.61	-.09
59	.20	-.05	.09	-.06	-.60	.02
60	.08	.07	.01	-.19	-.61	.02
61	.09	-.11	-.04	.01	-.01	.76
62	-.12	.09	-.06	-.03	-.10	.64
Unclassified items						
63	.10	-.10	.13	.10	-.44	-.01
64	.41	.32	.06	-.33	-.17	.02

(table continues)

Table B3 (continued)

Item no.	Factors and loadings					
	1	2	3	4	5	6
65	.19	.32	.12	- .26	- .23	- .03
66	.07	.48	- .12	- .04	.17	.17
67	- .09	.18	.01	.11	.19	.26
68	.03	.43	.06	- .02	.12	.34
69	.22	.24	- .03	.16	.35	.21
Eigen value WIT	5.00	3.52	1.46	1.35	1.14	1.04
% of variance WIT	21.8	15.3	6.4	5.9	4.9	4.5
Eigen value IT	4.49	2.97	0.94	0.79	0.68	0.60
% of variance IT	43.3	28.6	9.1	7.6	6.6	4.8

WIT = without iterations. IT = with iterations.

Factor Pattern of Excellence Questionnaire

Item no.	Factors and loadings			
	1	2	3	4 ^u
70	.70	.12	.01	- .01
71	.75	.04	.07	.04
72	.66	- .11	- .11	- .15
73	.04	.65	- .05	.03
74	.05	.79	.07	- .09
75	.03	.78	- .14	- .01
76	.05	.58	- .09	- .05
77	- .18	.09	- .84	- .14
78	.10	.13	- .68	.08
79	- .01	.09	.09	- .95
Unclassified items				
80	.36	.11	- .09	- .06
81	.42	- .08	- .06	- .32
82	.08	.07	- .20	- .42
83	.09	- .10	- .11	- .02
84	.11	- .14	- .17	- .17
85	.23	.09	- .49	- .02
Eigen value WIT	4.81	2.27	1.14	1.07
% of variance WIT	30.0	14.2	7.1	6.7
Eigen value IT	4.33	1.79	0.67	0.66
% of variance IT	58.8	24.4	9.1	7.6

WIT = without iterations. IT = with iterations.

u = unused factor due to high loading of only one item.

Factor Pattern of Person's Environmental Forces' Questionnaire

Factors and loadings

Item no.	1	2	3	4 ^u	5	6	7	8	9 ^u	10	11	12	13
86	.62	-.01	-.10	.01	-.12	.19	.01	.16	.04	-.08	.02	.12	.11
87	.69	.05	.04	.13	-.10	.13	.03	.10	-.01	-.00	.10	.19	.01
88	.64	.02	-.10	.07	-.05	.17	.07	.07	-.02	.02	.01	.09	.01
89	-.08	.61	.01	.02	.05	.00	.03	-.08	-.09	-.04	.00	.09	-.10
90	.02	.71	.02	-.05	-.07	.05	-.06	.08	.02	.06	-.10	-.07	-.03
91	.28	.50	-.11	-.04	.06	-.12	.08	.01	-.04	.14	-.02	-.11	-.15
92	-.06	.04	-.73	.01	-.13	.04	.06	.10	.05	-.05	.07	.10	.15
93	-.01	.01	-.88	.09	-.09	-.02	.02	.07	.08	-.04	.05	.01	.10
94	-.02	-.13	-.82	-.04	-.01	.01	-.04	-.06	-.15	.07	-.05	-.07	-.12
95	.09	.12	-.68	-.08	.13	-.03	-.13	-.07	.06	.11	-.12	-.02	-.23
96	.03	-.07	-.04	.74	-.11	-.04	.04	-.10	-.01	.15	-.05	.04	.04
97	.06	-.03	-.06	.05	-.74	.05	-.04	.01	-.04	-.09	-.03	.05	.03
98	-.05	.03	-.03	.05	-.72	.06	-.01	.00	.03	-.04	-.01	.12	-.03
99	.07	-.01	-.04	.00	-.73	.07	-.02	.07	-.01	-.03	-.03	-.04	-.15
100	.02	.00	-.09	.10	-.67	.02	.04	-.03	.01	.03	.03	.01	-.22

(table continues)

Factors and loadings

Item no.	1	2	3	4 ^u	5	6	7	8	9 ^u	10	11	12	13
101	.10	.03	.02	-.15	-.23	.67	.05	.10	.11	.04	.02	.04	.12
102	.06	.05	-.02	-.16	-.08	.80	.07	.03	.14	.14	.06	.04	-.00
103	-.00	-.10	-.04	.14	.01	.68	-.04	-.08	-.28	.01	-.07	-.07	-.10
104	-.00	-.12	-.04	.23	.17	.12	.61	.20	.08	-.10	.13	.14	-.16
105	.08	-.09	.06	.01	.01	-.02	.66	-.03	-.03	-.05	-.12	.01	-.05
106	.01	.12	-.01	-.06	-.08	.02	.61	-.07	-.11	.04	-.06	-.19	.06
107	.01	.06	-.08	-.05	-.12	.05	.06	.67	.02	.03	.12	.13	.07
108	.09	.01	-.07	-.03	-.08	.04	.02	.75	-.08	.06	.11	-.00	-.04
109	.11	-.11	-.13	.06	.14	.04	-.17	.55	-.23	-.06	-.25	-.03	-.05
110	-.11	.19	-.01	.09	.05	.06	.01	.12	-.52	.03	.03	.16	-.08
111	-.02	.01	-.03	.17	.03	.06	.02	-.00	.01	.72	-.02	-.02	-.07
112	-.02	.01	-.01	.08	.09	.04	-.04	.06	-.00	.75	.03	.03	.01
113	-.01	-.17	-.14	.01	-.07	.05	.16	.01	-.16	-.01	-.55	.08	-.05
114	-.12	.24	-.00	.08	-.01	.03	.08	-.06	.09	.06	-.80	.09	-.03
115	.02	-.09	-.04	.04	-.07	-.02	-.07	.01	-.01	-.03	-.09	.70	-.09
116	.15	.06	-.02	-.07	-.05	.02	.04	.04	.07	.05	-.04	.71	-.05

(table continues)

Factors and loadings

Item no.	1	2	3	4 ^u	5	6	7	8	9 ^u	10	11	12	13
117	.03	.03	-.03	.11	-.08	.02	-.10	.06	-.15	.07	.02	.55	.01
118	.20	.08	-.06	-.01	-.10	.07	.05	.03	-.20	-.02	.04	.54	.06
119	-.01	-.06	-.05	.05	-.28	-.02	-.04	.11	-.11	.03	-.10	-.04	-.58
120	.07	-.10	-.10	-.04	-.15	.07	.02	-.02	-.14	.06	.01	.07	-.59
121	-.07	.28	-.01	.04	-.06	-.00	.02	.09	.11	.03	-.07	-.00	-.69
122	-.01	.12	-.05	-.08	-.04	.05	.08	-.09	.04	-.00	-.00	.09	-.66
Unclassified items													
123	.05	-.07	-.08	.27	.02	.08	.42	.16	.13	-.19	.08	.15	-.08
124	.66	-.03	-.04	.05	-.07	.04	.01	.02	.22	-.03	.02	.30	.05
125	.02	-.10	-.03	-.13	-.14	.05	.23	.43	.13	.15	-.20	.27	.07
126	.11	-.11	-.05	-.06	-.16	.10	.19	.41	.11	.15	-.28	.11	.02
127	.06	.05	.01	.71	-.11	-.03	.05	.04	.03	.32	-.03	-.00	.08
128	-.05	.25	-.05	-.09	-.05	.04	.11	.15	.47	-.01	-.10	.13	.02
129	.51	.05	.02	-.02	-.04	-.08	.12	.03	-.38	.07	-.00	-.05	-.17
130	.36	.01	-.08	-.08	-.02	.07	.08	-.05	-.46	.04	-.19	.02	-.07

(table continues)

Factors and loadings

Item no.	1	2	3	4 ^u	5	6	7	8	9 ^u	10	11	12	13
131	.22	.42	-.09	.01	.08	.04	.02	-.13	-.12	.01	-.24	.03	-.07
132	.11	.28	-.02	.14	.02	-.04	-.19	.26	-.00	-.12	-.37	-.20	-.14
133	.04	.18	-.04	.25	.04	.36	-.07	-.07	.01	-.13	-.19	-.12	-.28
Eigen value WIT	11.94	5.13	2.61	2.32	2.08	1.74	1.57	1.44	1.41	1.33	1.20	1.09	1.02
% of variance WIT	24.9	10.7	5.2	4.8	4.3	3.6	3.3	3.0	2.9	2.8	2.5	2.3	2.1
Eigen value IT	11.58	4.75	2.17	1.96	1.74	1.34	1.21	1.08	1.00	0.92	0.83	0.75	0.62
% of variance IT	38.7	15.8	7.2	6.5	5.8	4.5	4.0	3.6	3.4	3.1	2.8	2.5	2.1

WIT = Without iterations. IT = With iterations

u = Unused Factor due to high loading of only item. and other reasons mentioned on

page 114 and 115.

Table B6

Factor Pattern of Biographical Information Questionnaire

Item no.	Factors and loadings			
	1	2 ^u	3 ^u	4 ^u
134	.83	.02	.17	- .18
135	.72	.01	- .21	.05
136	- .08	.79	.04	.05
Unclassified items				
137	.67	- .35	.24	.37
138	.04	- .08	- .26	- .06
139	.22	- .09	.66	- .61
140	- .08	- .45	.51	.05
141	.68	- .34	.30	.34
142	.01	- .03	- .05	- .16
143	- .12	-1.00	- .09	- .10
144	.10	- .05	.32	.05
145	- .27	- .08	- .02	.12
Eigen value WIT	4.01	1.72	1.28	1.10
% of variance WIT	33.4	14.4	10.6	9.2
Eigen value IT	3.82	1.47	0.73	0.70
% of variance IT	57.8	22.2	11.0	9.5

WIT = without iterations. IT = with iterations.

u = unused factor due to high loading of only one item.

Table B7

Factor Pattern of Intrinsic Motivation Questionnaire

Item no.	Factor and loadings
	1
146	.66
147	.63
148	.60
149	.68
Unclassified items	
150	.49
151	.48
Eigen value WIT	2.74
% of variance WIT	45.7
Eigen value IT	2.11
% of variance IT	100.0

WIT = without iterations. IT = with iterations.

Table B8

Factor Pattern of Locus of Control Questionnaire

Item no.	Factors and loadings	
	1	2 ^u
152	.69	.10
153	.61	- .09
154	- .01	.66
Unclassified item		
155	.01	.39
Eigen value WIT	1.39	1.23
% of variance WIT	34.8	30.8
Eigen value IT	0.75	0.66
% of variance IT	57.0	43.0

WIT = without iterations. IT = with iterations.

u = unused factor due to high loading of only one item.

Table B9

Factor Pattern of Need for Pioneering Questionnaire

Item no.	Factors and loadings	
	1	2
156	.64	.07
157	.77	.19
153	.64	.06
159	.62	.05
160	-.02	.67
161	.00	.50
Unclassified items		
162	.30	.24
163	.47	.13
164	.35	.37
165	.35	.40
Eigen value WIT	3.98	1.10
% of variance WIT	39.8	11.0
Eigen value IT	3.38	0.49
% of variance IT	87.3	12.7

WIT = without iterations. IT = with iterations.

Table B10

Factor Pattern of Need for Self - Actualization Questionnaire

Item no.	Factors and loadings	
	1	2 ^u
166	.66	.09
167	.64	- .03
168	.72	- .08
169	.67	- .01
170	- .11	.70
Unclassified items		
171	.05	.47
172	.30	.34
173	.45	.24
174	.07	.37
175	.47	- .00
Eigen value WIT	3.28	1.22
% of variance WIT	32.8	12.2
Eigen value IT	2.61	0.66
% of variance IT	82.5	17.5

WIT = without iterations. IT = with iterations.

u = unused factor due to high loading of only one item.

Table B11

Factor Pattern of Personal Characteristics Questionnaire

Item no.	Factors and loadings								
	1	2	3	4 ^u	5 ^u	6	7 ^u	8 ^u	9 ^u
176	.57	.16	.18	-.06	-.18	-.12	.01	.07	.15
177	.56	.07	.03	-.12	.12	.02	-.07	-.18	-.01
178	.60	-.12	.12	.08	-.01	.09	-.06	.13	-.06
179	-.01	.60	.08	.01	.19	.24	.04	-.07	-.04
180	-.03	.63	.03	-.18	-.02	-.10	-.08	.20	.12
181	.06	.70	-.08	.03	-.10	.20	.01	-.03	-.14
182	.02	.04	.68	-.01	.08	.08	-.03	-.19	.07
183	.04	-.01	.68	-.00	.04	-.01	-.01	-.06	-.08
184	.07	-.03	.67	.13	-.14	.09	-.01	.16	.01
185	-.01	.12	.00	-.68	.02	-.01	-.14	-.04	-.03
186	.18	.17	-.07	.12	.54	.00	.01	.20	-.03
187	.02	.10	.09	-.06	-.07	.64	.08	.05	.05
188	-.05	.06	.04	.00	.02	.58	-.04	.01	-.01
189	-.02	-.05	.03	-.20	-.06	-.02	-.56	-.01	-.03
190	-.06	.04	-.10	.03	.12	.14	-.03	.58	-.02
Unclassified items									
191	.36	-.23	.04	-.06	.10	.12	-.16	-.09	-.10
192	.38	-.20	.07	-.08	.25	.18	.01	-.00	-.19
193	.21	-.06	-.04	-.32	.14	.09	.06	.01	-.03

(table continues)

Table B11 (continued)

Item no.	Factors and loadings								
	1	2	3	4 ^u	5 ^u	6	7 ^u	8 ^u	9 ^u
194	.18 - .25		.27 - .28		.03 - .07		.19	.32 - .25	
195	.42	.03	.15 - .38		.09 - .13		.10	.23 - .07	
196	.38	.01	.06	.03 - .10		.09 - .32		.09	.17
197	.32 - .09		.07 - .00		.06 - .07 - .08			.02 - .48	
198	.07	.08 - .07 - .22			.04 - .02 - .31			.04 - .41	
199	.15 - .01 - .11 - .47				.06	.25 - .03		.07 - .14	
200	.16 - .07		.04 - .34		.16	.08 - .30 - .19			.01
201	- .01	.03	.10 - .23		.05	.21 - .33		.15	.18
202	.13 - .07		.13 - .18		.01	.11 - .29		.07	.05
203	.13 - .09		.22 - .12		.22	.06 - .01		.01 - .43	
204	.14 - .35		.03 - .15		.06	.18 - .04		.14 - .24	
205	.01	.26	.01 - .06		.17 - .05 - .07			.27	.26
206	.11	.06 - .08	.22		.21 - .01 - .31			.36 - .13	
207	- .02	.34 - .02 - .06			.33 - .04	.05		.15	.20
208	- .02	.04	.31 - .03		.00	.13	.05	.10 - .41	
209	- .13 - .12		.16 - .23		.36 - .13 - .06			.09 - .05	

(table continues)

Table P11 (continued)

Item no.	Factors and loadings								
	1	2	3	4 ^u	5 ^u	6	7 ^u	8 ^u	9 ^u
210	.04	.17	.24	.09	.18	.00	.38	.05	.26
211	.01	.00	.23	.05	.14	.27	.16	.08	.23
EV WIT	.10	3.29	2.11	1.67	1.35	1.27	1.23	1.14	1.05
PV WIT	22.5	9.1	5.9	4.6	3.7	3.5	3.4	3.2	2.9
EV IT	7.68	2.76	1.57	1.1	0.81	0.74	0.65	0.61	0.50
PV IT	46.3	16.9	9.6	6.9	4.9	4.5	4.0	3.7	3.1

EV WIT = Eigen value without iterations.

EV IT = Eigen value with iterations.

PV WIT = Per cent of variance without iterations.

PV IT = per cent of variance with iterations.

u = unused factor due to reasons mentioned on page 114 and 115.

Table B12

Factor Pattern of Self - Esteem Questionnaire

Item no.	Factors and loadings					
	1	2 ^u	3 ^u	4 ^u	5 ^u	6 ^u
212	.68	-.02	-.13	.02	.14	-.07
213	.63	-.02	.02	-.06	.28	.13
214	.69	-.04	.01	.01	.15	.07
215	.02	-.72	-.08	-.00	.04	.19
216	-.09	-.02	.59	.05	-.03	-.12
217	-.08	.08	-.13	.73	-.13	.10
218	.03	-.07	.07	-.06	.53	.10
Unclassified items						
219	-.00	.01	-.01	.08	-.02	.33
220	.03	.14	.11	.49	.21	.21
221	.13	.47	-.08	.07	.08	.16
222	-.17	.26	-.02	.02	.06	.20
223	.12	.09	.53	-.14	-.10	.31
224	.11	.05	.06	.28	-.43	-.14
225	.46	.09	.06	.01	-.07	-.08
226	.24	-.10	.17	.31	.06	-.05
Eigen value WIT	2.69	1.98	1.32	1.13	1.09	1.07
% of variance WIT	17.3	13.2	8.8	7.6	7.2	7.1
Eigen value IT	1.98	1.4	0.74	0.51	0.46	0.25
% of variance IT	36.4	25.8	13.6	9.4	8.5	6.4

WIT = without iterations. IT = with iterations

u = unused factor due to high loading of only one item.

Table B13

Factor Pattern of Climate Questionnaire

Item no.	Factor and loadings					
	1	2	3	4	5 ^u	6 ^u
227	.66	.11	.02	.06	.14	.06
223	.62	.00	.06	.10	.01	.03
229	.76	.17	-.13	-.04	.11	-.07
230	.72	.01	-.08	.14	-.02	.06
231	.80	-.03	.08	-.08	-.05	-.14
232	.78	-.06	.03	-.10	-.10	-.15
233	.03	.67	.01	-.15	.01	-.09
234	.06	.79	-.06	-.04	-.11	-.15
235	.12	.74	.07	.14	.04	.14
236	-.02	.67	.11	.14	.07	.16
237	-.08	.62	.06	.02	-.01	.02
238	.09	.08	.60	.03	-.07	-.03
239	-.04	.06	.66	.01	-.02	.00
240	.02	-.04	.04	.53	.00	.01
241	.08	.09	-.07	.50	.24	-.00
242	.05	.05	.01	.67	.02	.05
Unclassified items						
243	.69	-.09	-.00	.18	-.32	.08
244	.49	-.17	.00	.21	-.23	-.05

(table continues)

Table R13 (continued)

Item no.	Factors and loadings					
	1	2	3	4	5 ^u	6 ^u
245	.44	- .03	- .11	.29	- .30	.02
246	.49	- .05	- .03	.18	.28	- .02
247	.35	- .03	- .06	.25	- .21	- .17
248	.04	.05	- .15	.47	- .02	- .23
249	.18	- .03	- .05	.38	.06	- .26
250	.35	.02	.10	.18	- .07	- .47
251	.39	.00	.08	.14	.01	- .50
252	.05	- .09	.05	.34	.11	- .37
253	.12	.37	.24	- .12	- .37	- .02
254	.03	.22	.32	.02	- .43	- .04
255	- .05	.05	.49	.02	- .06	- .11
256	- .01	- .06	.41	- .08	.19	.15
Eigen value WIT	9.67	4.37	1.39	1.22	1.04	1.01
% of variance WIT	32.2	14.6	4.6	4.1	3.5	3.4
Eigen value IT	9.26	3.89	0.84	0.69	0.55	0.47
% of variance IT	58.9	24.7	5.4	4.4	3.6	3.0

WIT = without iterations. IT = with iterations.

u = unused factor due to high loading of only one item.

Table B14

Factor Pattern of Job Characteristics Questionnaire

Item no.	Factors and loadings		
	1	2	3 ^u
257	.74	.02	- .18
258	.66	.03	.24
259	.69	- .03	.14
260	- .07	.77	- .01
261	- .08	.72	.00
262	- .02	.03	.79
Unclassified items			
263	.24	.47	.01
264	.35	.33	- .02
265	.08	.32	.06
266	.36	.25	.32
Eigen value WIT	3.91	1.14	1.01
% of variance WIT	39.1	11.4	10.1
Eigen Value IT	3.38	0.62	0.69
% of variance IT	73.6	13.6	12.8

WIT = without iterations. IT = with iterations.

u = unused factor due to high loading of only one item.

Factor Pattern of Leadership Styles Questionnaire

Factor and loadings

Item no.

1

267	.68
268	.83
269	.82
270	.75
271	.78
272	.66
273	.78
274	.75
275	.80
276	.82
277	.77
278	.75
279	.82
280	.82
281	.75
282	.84
283	.84
284	.78
285	.74
286	.82

Eigen value WIT	12.68
% of variance WIT	62.9
Eigen value IT	12.21
% of variance IT	100.0

WIT = without iterations. IT = with iterations.

Table B16

Factor Pattern of Role Clarity Questionnaire

Item no.	Factor and loadings
	1
287	.61
283	.54
289	.65
Unclassified item	
290	.43
Eigen value WIT	1.92
% of variance WIT	48.1
Eigen value IT	1.25
% of variance IT	100.0

WIT = without iterations. IT = with iterations.

Table B17

Factor Pattern of Role Overload Questionnaire

Item no.	Factors and loadings	
	1	2
291	.73	.05
292	.94	- .11
293	- .05	.66
294	.11	.50
Unclassified item		
295	.40	.09
Eigen value WIT	2.29	1.01
% of variance WIT	45.7	20.3
Eigen value IT	1.33	0.46
% of variance IT	80.0	20.0

WIT = without iterations. IT = with iterations.

Table B18

Factor Pattern of Task Structure Questionnaire

Item no.	Factor and loadings
	1
296	.64
297	.73
298	.58
Unclassified item	
299	.45
Eigen value WIT	2.08
% of variance WIT	52.0
Eigen value IT	1.48
% of variance IT	100.0

WIT = without iterations. IT = with iterations.

Table B19

Factor Pattern of Theory Y Questionnaire

Item no.	Factor and loadings
	1
300	.64
301	.68
302	.73
303	.65
Eigen value WIT	2.36
% of variance WIT	59.0
Eigen value IT	1.81
% of variance IT	100.0

WIT = without iterations. IT = with iterations.

Table B20

Factor Pattern of Theory Z Questionnaire

Item no.	Factors and loadings			
	1	2	3 ^u	4 ^u
304	.63	- .02	- .04	.00
305	.61	.13	.12	- .28
306	.61	- .00	- .01	.02
307	.70	- .09	.04	.10
308	.66	.16	- .10	.03
309	- .04	.61	.12	.05
310	.03	.90	- .12	.10
311	- .05	.02	.76	- .11
Unclassified items				
312	.40	- .11	.17	.30
313	.08	.13	.04	.39
314	.33	.13	.13	.40
315	.03	.00	.46	.14
316	.49	.18	.16	.09
317	.21	.32	.12	- .26
Eigen value WIT	4.76	1.40	1.19	1.03
% of variance WIT	34.0	10.0	8.5	7.4
Eigen value IT	4.24	0.89	0.64	0.44
% of variance IT	68.2	14.3	10.3	7.1

WIT = without iterations. IT = with iterations.

u = unused factor due to reasons mentioned on page 114 and 115.

Table B21

Factor Pattern of Organizational Effectiveness Questionnaire

Item no.	Factor and loadings
	1
318	.79
319	.86
320	.66
321	.60
Eigen value WIT	2.70
% of variance WIT	64.9
Eigen value IT	2.16
% of variance IT	100.0

WIT = without iterations. IT = with iterations.

Table B22

Factor Pattern of Job Satisfaction Questionnaire

Item no.	Factors and loadings			
	1 ^u	2	3	4
322	.61	.02	.18	- .13
323	.02	.59	.01	- .04
324	- .18	.78	.19	.08
325	.21	.61	.04	.04
326	.20	- .08	.66	- .01
327	- .06	.10	.76	.12
328	- .04	.09	.05	.56
329	.03	- .04	.16	.62
Unclassified items				
330	.39	.22	- .11	.27
331	.49	.12	.11	.20
332	.33	.09	.04	.18
333	.43	.45	- .02	.04
334	.39	.21	- .09	.19
335	.70	- .02	.42	- .16
336	.37	.15	.12	.13
337	.40	.38	.14	- .01
338	.41	- .06	.04	.32
339	.27	- .13	.32	.28

(table continues)

Table R22 (continued)

Item no.	Factors and loadings			
	1 ^u	2	3	4
340	-.03	.09	.46	.25
341	.14	.23	.45	.02
Eigen value WIT	7.79	1.41	1.20	1.16
% of variance WIT	39.0	7.0	6.0	5.8
Eigen value IT	7.30	0.92	0.71	0.65
% of variance IT	76.2	9.6	7.4	6.8

WIT = without iterations.

IT = with iterations.

u = unused factor due to high loading of only one item.

Table B23

Factor Pattern of Personal Effectiveness Questionnaire

Item no.	Factor and loadings
	1
342	.72
343	.75
344	.69
345	.55
Eigen value WIT	2.38
% of variance WIT	59.4
Eigen value IT	1.4
% of variance IT	100.0

WIT = without iterations. IT = with iterations.

Appendix C

Intercorrelations, Means, Standard Deviations, Standardized
Cronbach's Alphas, and Number of Items Pertaining to Variables

Sl.No.	Variables	1	2	3	4	5	6
1	AAPS	1.00					
2	II	.28	1.00				
3	OAPS	.42	.24	1.00			
4	NCI	.15	.29	.27	1.00		
5	ASAPS	.37	.23	.48	.28	1.00	
6	SAPS	.38	.25	.45	.28	.33	1.00
7	ANAPS	.41	.35	.40	.40	.45	.43
8	CA	.34	.24	.51	.33	.55	.39
9	CT	.23	.24	.42	.17	.40	.26
10	PA	-.08	-.13	-.09	-.19	-.03	-.09
11	EM	.16	.26	.13	.19	.27	.21
12	JI	.03	-.03	-.02	-.16	-.02	-.12
13	PTR	.31	.30	.38	.16	.43	.36
14	WIC	-.04	-.20	-.03	-.22	-.02	-.10
15	GC	.00	.08	.13	-.02	.03	.03
16	SC	-.00	-.04	.14	.02	-.08	.02
17	QCEE	.26	.20	.21	.15	.35	.28
Mean		6.56	5.51	13.70	5.69	10.37	6.38
<u>SD</u>		1.65	1.65	2.89	1.70	2.10	1.74
Alpha		0.77	0.61	0.82	0.59	0.76	0.74
No. of items		2	2	4	2	3	2

(table continues)

Appendix C (continued)

Sl.No.	Variables	1	2	3	4	5	6
18	EXR	18	14	19	- 03	25	20
19	OEX	24	13	32	04	31	27
20	FO (PPE)	17	12	16	13	33	15
21	SEF (WE)	09	11	18	12	20	16
22	EPCI (PPE & PE)	25	10	26	15	24	11
23	IV (PPE)	19	15	20	24	23	25
24	EF (EWE)	07	11	08	16	18	15
25	ARO (EWE & CE)	06	12	01	01	02	10
26	FBA (EWE)	14	09	08	10	18	03
27	PSP (PE)	- 02	12	02	17	01	11
28	FDT (PE)	16	08	17	17	23	21
29	SC (EWE)	22	09	16	11	34	16
30	IV (PE)	24	24	35	27	35	31
31	S	- 05	14	- 01	07	03	06
32	IM	19	07	31	- 01	29	08
33	ILC	24	19	32	11	31	37
34	PI	27	22	42	18	31	30
35	PD	20	21	38	28	24	31
36	NSA	13	02	26	07	31	08
37	DPS	22	12	35	27	45	20
38	QBR	07	15	10	23	02	18
39	CPA	21	13	31	17	32	14
40	OWAJ	06	11	25	15	09	19

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	1	2	3	4	5	6
41	SE	10	12	20	14	34	10
42	ETR	10	19	13	08	15	15
43	D	- 04	03	- 08	- 16	- 13	- 07
44	AS	- 07	- 13	- 24	- 21	- 18	- 15
45	SB	06	23	21	21	19	25
46	AO	08	14	16	14	15	16
47	TI	21	11	33	16	35	17
48	NPLS	10	19	12	16	14	12
49	RCL	13	22	29	18	28	27
50	TC	09	12	14	21	08	05
51	CTC	06	11	18	16	11	14
52	TS	16	20	31	21	31	26
53	TY	20	19	24	11	25	22
54	WC	12	26	16	14	22	18
55	IWM	14	21	12	22	29	20
56	OE	05	07	08	- 10	12	- 01
57	SCP	00	05	03	- 09	07	03
58	IJS	- 04	05	09	06	14	08
59	SJSHO	01	00	02	- 07	06	- 04
60	PE	13	13	31	15	38	20

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	7	8	9	10	11	12
1	AAPS						
2	II						
3	OAPS						
4	NCI						
5	ASAPS						
6	SAPS						
7	ANAPS	1.00					
8	CA	35	1.00				
9	CT	27	46	1.00			
10	FA	- 17	00	- 04	1.00		
11	EM	30	36	35	- 09	1.00	
12	JT	- 10	- 10	06	36	- 08	1.00
13	PTR	29	58	55	06	38	00
14	WIC	- 09	- 00	- 06	30	- 19	27
15	GC	04	15	13	14	07	08
16	SC	- 02	- 02	04	- 02	02	02
17	QCEE	30	42	28	07	22	- 04
18	EXR	12	28	31	06	21	07
19	OEX	13	45	35	02	20	- 03
Mean		5.66	24.73	17.61	7.13	5.47	6.12
<u>SD</u>		1.74	4.06	3.58	1.85	1.97	1.93
Alpha		0.73	0.84	0.79	0.70	0.71	0.51
No. of items		2	7	5	2	2	2

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	7	8	9	10	11	12
20	FO (PPE)	21	30	12	- 05	17	- 03
21	SEF (WE)	18	22	24	03	10	17
22	EPCI (PPE & PE)	16	29	11	- 03	11	- 05
23	IV (PPE)	24	29	10	- 06	18	- 04
24	EF (EWE)	19	23	05	- 10	17	- 08
25	ARO (EWE & CE)	12	11	- 02	- 01	01	01
26	FBA (EWE)	11	26	01	- 02	07	- 11
27	PSP (PE)	02	03	00	- 15	04	- 07
28	FDT (PE)	16	30	16	- 01	07	- 01
29	SC (EWE)	20	33	13	04	18	- 05
30	IV (PE)	41	40	28	- 13	13	- 06
31	S	08	06	12	- 10	19	05
32	IM	18	37	38	04	14	- 02
33	ILC	31	41	35	- 02	30	- 03
34	PI	27	46	34	- 04	15	- 04
35	PD	30	30	25	- 12	12	- 14
36	NSA	04	40	35	00	07	- 02
37	DPS	37	52	37	- 06	22	- 04
38	QBR	12	04	10	- 17	12	- 15
39	CPA	17	49	33	- 03	19	- 06
40	OWAJ	10	20	22	- 13	- 03	- 15
41	SE	12	44	27	- 00	18	- 13

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	7	8	9	10	11	12
42	ETR	16	13	19	11	05	16
43	D	- 11	- 12	- 11	12	- 06	21
44	AS	- 17	- 24	- 20	14	- 09	18
45	SV	31	20	29	- 04	15	- 02
46	AO	14	20	23	09	15	17
47	TI	17	43	28	17	15	07
48	NPLS	22	08	16	- 06	11	08
49	RCL	20	38	32	00	14	- 02
50	TC	18	06	15	- 24	14	- 14
51	CTC	12	00	07	- 13	02	- 05
52	TS	23	40	31	- 01	14	03
53	TY	18	23	18	- 05	09	- 06
54	WC	33	17	21	- 03	17	04
55	IWM	26	22	17	- 03	11	02
56	OE	09	09	13	08	- 00	20
57	SCP	05	08	14	06	01	22
58	IJS	10	15	19	15	17	27
59	SJSHO	05	06	07	01	- 02	06
60	PE	18	47	34	02	16	- 05

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	13	14	15	16	17	18
13	PTR	1.00					
14	WIC	- 10	1.00				
15	GC	28	04	1.00			
16	SC	- 04	- 07	- 01	1.00		
17	QCEE	37	- 07	19	04	1.00	
18	EXR	29	06	26	- 03	22	1.00
19	OEX	40	03	22	02	41	33
20	FO (PPE)	27	05	- 07	- 04	17	15
21	SEF (WE)	23	14	08	02	10	14
22	EPCI (PPE & PE)	26	05	05	- 05	18	07
23	IV (PPE)	24	- 01	06	05	22	03
24	EF (EWE)	23	- 06	01	- 06	21	07
25	ARO (EWE & CE)	17	03	09	02	17	- 00
26	FBA (EWE)	19	- 04	04	- 08	17	03
27	PSP (PE)	04	- 12	- 04	- 08	05	05
28	FDT (PE)	30	05	12	- 02	21	10
29	SC (EWE)	31	02	- 01	- 04	31	13
30	IV (PE)	34	01	05	02	26	10
31	S	08	- 12	- 05	- 01	05	05
Mean		10.43	6.54	3.75	2.09	10.78	14.94
<u>SD</u>		1.91	1.80	1.37	1.14	1.91	2.69
Alpha		0.51	0.66	NA	NA	0.70	0.81
No. of items		2	2	NA	NA	3	4

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	13	14	15	16	17	18
32	IM	29	- 02	11	04	27	27
33	ILC	46	- 04	25	05	29	39
34	PI	38	- 07	17	08	29	20
35	PD	18	- 16	06	03	24	13
36	NSA	30	- 06	10	05	29	26
37	DPS	34	- 06	11	02	30	17
38	QBR	03	- 15	- 06	05	06	04
39	CPA	35	01	02	05	26	34
40	OWAJ	17	- 09	08	09	08	25
41	SE	28	- 01	09	10	19	18
42	ETR	17	10	07	- 04	14	12
43	D	- 05	30	05	- 04	- 14	00
44	AS	- 17	20	- 04	- 04	- 15	- 06
45	SV	19	- 02	04	- 00	20	14
46	AO	25	11	04	09	16	20
47	TI	37	- 01	15	04	31	21
48	NPLS	19	07	- 07	- 07	18	- 08
49	RCL	34	- 01	16	04	26	26
50	TC		- 19	- 04	- 02	01	08
51	CTC	03	- 16	- 01	- 04	00	04
52	TS	38	03	11	- 01	29	21

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	13	14	15	16	17	18
53	TY	22	05	05	04	24	22
54	WC	22	05	03	- 05	20	16
55	IWM	23	- 02	05	- 03	27	05
56	OE	03	23	- 02	- 08	12	13
57	SCP	14	21	07	- 05	10	10
58	IJS	19	11	05	- 07	17	11
59	SJSHO	12	09	07	- 03	16	13
60	PE	37	- 00	31	12	34	31

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	19	20	21	22	23	24
19	OEX	1.00					
20	FO (PPE)	09	1.00				
21	SEF (WE)	21	12	1.00			
22	EPCI (PPE & PE)	16	35	17	1.00		
23	IV (PPE)	15	49	04	43	1.00	
24	EF (EWE)	09	54	07	29	51	1.00
25	ARO (EWE & CE)	03	29	09	08	17	27
26	FBA (EWE)	11	53	07	40	37	40
27	PSP (PE)	06	10	14	14	06	13
28	FDT (PE)	18	17	33	34	26	23
29	SC (EWE)	14	59	05	34	50	38
30	IV (PE)	23	25	44	42	43	28
31	S	09	- 09	20	- 09	- 07	- 02
32	IM	29	12	09	22	07	12
33	ILC	34	18	08	08	15	18
34	PI	35	20	07	25	25	21
35	PD	18	08	03	19	14	07
36	NSA	25	07	- 01	17	07	15
37	DPS	23	20	15	21	18	18
Mean		7.55	8.26	9.63	12.34	11.01	8.73
<u>SD</u>		1.34	2.90	2.54	4.02	3.87	2.97
Alpha		0.76	0.83	0.71	0.87	0.89	0.81
No. of items		2	3	2	4	4	3

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	19	20	21	22	23	24
38	QBR	13	03	01	- 00	05	04
39	CPA	23	19	14	20	16	16
40	OWAJ	23	03	25	00	- 03	- 07
41	SE	22	13	12	19	15	18
42	ETR	16	- 00	49	04	04	- 07
43	D	01	- 18	16	- 09	- 15	- 15
44	AS	- 13	- 07	05	- 03	- 12	- 10
45	SV	23	07	35	- 01	08	03
46	AO	26	14	49	13	04	10
47	TI	35	11	25	28	17	20
48	NPLS	08	12	33	07	06	05
49	RCL	33	14	40	16	14	18
50	TC	- 04	12	09	05	- 06	01
51	CTC	02	08	- 02	- 03	05	- 04
52	TS	28	15	31	30	24	21
53	TY	19	08	17	12	10	05
54	WC	20	14	37	10	03	02
55	IWM	17	11	22	16	16	07
56	OE	18	07	31	03	- 03	- 01
57	SCP	12	- 08	38	01	04	- 02
58	IJS	24	09	36	- 01	05	04
59	SJSHO	23	06	07	03	00	03
60	TE	38	13	15	14	21	14

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	25	26	27	28	29	30
25	ARO (EWE & CE)	1.00					
26	FPA (EWE)	18	1.00				
27	PSP (PE)	11	10	1.00			
28	FDT (PE)	22	19	17	1.00		
29	SC (EWE)	21	47	11	18	1.00	
30	IV (PE)	19	20	13	45	24	1.00
31	S	- 03	- 18	- 01	08	- 17	09
32	IM	02	16	- 00	17	18	22
33	ILC	08	15	- 07	12	17	23
34	TI	11	17	01	09	23	34
35	PD	- 05	06	06	05	08	25
36	NSA	- 01	18	- 04	12	11	19
37	DPS	06	22	- 02	18	25	33
38	QBR	01	- 04	12	- 05	- 03	05
39	CPA	00	15	- 02	14	23	29
40	OWAJ	- 03	- 01	08	01	- 00	12
41	SE	- 06	29	- 06	14	14	20
42	ETR	- 05	00	02	02	04	21
43	D	- 04	- 20	- 07	- 00	- 13	- 04
Mean		8.43	9.74	4.67	6.12	12.38	12.34
<u>SD</u>		2.42	2.89	1.99	1.87	3.61	3.52
Alpha		0.68	0.77	0.78	0.70	0.83	0.83
No. of items		3	3	2	2	4	4

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	25	26	27	28	29	30
44	AS	- 02	- 07	- 08	- 07	- 10	- 15
45	SV	09	02	08	10	10	26
46	AO	01	12	01	23	05	24
47	TI	02	22	- 01	18	20	26
48	NPLS	06	10	12	14	12	18
49	RCL	08	17	09	21	19	34
50	TC	- 02	04	09	- 06	- 03	13
51	CTC	02	02	11	- 11	03	06
52	TS	04	13	05	28	21	38
53	TY	08	12	01	20	15	21
54	WC	03	02	08	12	12	18
55	IWM	05	10	06	10	10	18
56	OE	- 01	- 01	03	05	- 02	09
57	SCP	09	00	00	03	01	03
58	IJS	00	03	04	11	10	16
59	SJSHO	03	06	- 00	00	08	01
60	PE	11	16	03	20	20	26

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	31	32	33	34	35	36
31	S	1.00					
32	IM	05	1.00				
33	ILC	03	30	1.00			
34	PI	09	44	36	1.00		
35	PD	- 03	21	23	35	1.00	
36	NSA	- 07	54	27	54	26	1.00
37	DPS	00	36	36	38	26	36
38	QBR	04	- 04	- 02	14	15	02
39	CPA	- 01	33	29	34	24	42
40	OWAJ	18	20	12	26	26	21
41	SE	01	43	32	36	16	46
42	ETR	16	11	20	16	10	03
43	D	- 05	- 20	- 05	- 19	- 14	- 20
44	AS	- 08	- 24	- 18	- 28	- 17	- 29
45	SV	15	12	22	23	28	- 00
46	AO	24	19	23	10	- 00	06
47	TI	- 08	45	31	36	20	42
48	NPLS	12	09	18	09	10	- 01
Mean		14.76	16.29	6.91	14.98	6.43	16.20
<u>SD</u>		11.34	2.55	1.31	2.97	1.81	2.45
Alpha		0.72	0.74	0.52	0.76	0.51	0.68
No. of items		2	4	2	4	2	4

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	31	32	33	34	35	36
49	RCL	14	26	36	34	23	25
50	TC	14	- 01	04	13	12	04
51	CTC	11	- 05	03	08	09	- 04
52	TS	12	25	29	34	20	25
53	TY	04	26	26	20	13	30
54	WC	14	07	23	14	18	- 03
55	IWM	03	11	15	20	16	09
56	OE	17	08	09	05	07	- 01
57	SCP	13	05	14	- 02	- 07	- 04
58	IJS	14	03	09	02	04	02
59	SJSHO	04	- 02	13	08	06	03
60	PE	- 03	31	42	29	22	34

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	37	38	39	40	41	42
37	DPS	1.00					
38	QBR	03	1.00				
39	CPA	40	02	1.00			
40	OWAJ	20	27	26	1.00		
41	SE	42	- 05	33	16	1.00	
42	ETR	04	07	07	25	11	1.00
43	D	- 17	- 07	- 13	- 20	- 17	21
44	AS	- 20	- 08	- 17	- 22	- 22	06
45	SV	12	14	06	18	05	54
46	AO	13	09	12	18	22	47
47	TI	39	- 08	31	08	45	23
48	NPLS	05	03	- 01	16	03	60
49	RCL	28	06	29	31	34	33
50	TC	11	05	12	17	00	- 01
51	CTC	01	06	01	13	- 19	- 07
52	TS	29	08	28	13	28	27
Mean		11.18	7.98	11.30	7.50	11.42	19.32
<u>SD</u>		2.02	2.58	2.13	1.41	1.84	5.08
Alpha		0.71	0.71	0.74	0.64	0.65	0.88
No. of items		3	3	3	2	3	6

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	37	38	39	40	41	42
53	TY	14	09	21	19	24	28
54	WC	14	- 01	05	20	10	60
55	IWM	20	- 02	14	11	14	30
56	OE	08	- 01	- 03	11	11	58
57	SCP	- 02	- 01	- 09	09	- 01	60
58	IJS	01	01	- 02	06	02	40
59	SJSHO	- 00	04	- 01	03	- 00	31
60	PE	44	04	27	18	26	11

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	43	44	45	46	47	48
43	D	1.00					
44	AS	45	1.00				
45	SV	10	01	1.00			
46	AO	19	07	33	1.00		
47	TI	02	- 07	21	35	1.00	
48	NPLS	11	06	49	45	14	1.00
49	RCL	01	- 08	30	44	32	29
50	TC	- 30	- 15	05	- 03	- 02	07
51	CTC	- 16	- 21	- 03	- 17	- 11	- 06
52	TS	01	- 06	19	44	36	27
53	TY	- 01	- 15	27	29	29	33
54	WC	07	04	53	37	14	57
55	IWM	07	- 01	28	14	20	30
56	OE	12	13	38	33	16	46
57	SCP	20	15	30	39	11	38
58	IJS	25	09	39	45	24	37
59	SAJSHO	16	11	22	28	16	23
60	PE	- 06	- 15	17	20	40	01
Mean		12.92	5.50	9.14	9.74	7.14	61.80
<u>SD</u>		4.35	1.77	2.32	2.42	1.59	18.05
Alpha		0.84	0.60	0.67	0.72	0.68	0.97
No. of items		5	2	3	3	2	20

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	49	50	51	52	53	54
49	RCL	1.00					
50	TC	08	1.00				
51	CTC	- 01	34	1.00			
52	TS	56	03	- 02	1.00		
53	TY	25	15	03	25	1.00	
54	WC	35	11	01	28	34	1.00
55	IWM	15	- 04	01	26	24	42
56	OE	24	03	- 13	16	28	55
57	SCP	22	- 09	- 06	19	19	43
58	ITS	30	- 07	- 02	23	16	32
59	SJSHO	13	02	- 08	12	18	25
60	PE	30	- 01	05	28	23	09
Mean		10.54	5.41	5.27	10.34	13.65	14.43
<u>SD</u>		2.29	2.26	2.12	2.35	2.83	3.72
Alpha		0.62	0.80	0.52	0.68	0.77	0.78
No. of items		3	2	2	3	4	5

(appendix continues)

Appendix C (continued)

Sl.No.	Variables	55	56	57	58	59	60
55	IWM	1.00					
56	OE	21	1.00				
57	SCP	21	56	1.00			
58	IJS	14	37	47	1.00		
59	SJSHO	20	32	34	42	1.00	
60	PE	12	15	12	19	15	1.00
Mean		6.36	11.93	9.23	6.32	6.99	15.52
<u>SD</u>		1.68	3.16	2.42	1.67	1.52	2.25
Alpha		0.72	0.82	0.75	0.79	0.61	0.77
No. of items		2	4	3	2	2	4

Appendix D

Factor Pattern of the Second Order Forced Factor Analysis of
the Dimensions of Creativity, Competence, and Excellence.

Variables	Factor matrix	Factor score coefficients
CA	0.76	0.22
CT	0.61	0.11
FA	- 0.09	- 0.02
EM	0.45	0.06
JI	- 0.08	0.01
PTR	0.70	0.16
WIC	- 0.13	- 0.03
GC	0.20	0.02
SC	0.01	0.01
AAPS	0.51	0.08
II	0.43	0.07
OAPS	0.63	0.12
NCI	0.38	0.04
ASAPS	0.66	0.14
SAPS	0.57	0.11
ANAPS	0.58	0.12
QCEE	0.51	0.08
EXR	0.37	0.05
OEX	0.51	0.08

"Forced" Factor Analysis Results for the Sectors in the Conceptual Scheme

566

Sector a				Sector b		
Variables	Factor matrix	Factor score coefficients	Variables	Factor matrix	Factor score coefficients	
FO (PPE)	.72	.24	TS	.52	.11	
SEF (WE)	.24	.05	RC	.55	.12	
EPCI (PPE & PE)	.59	.14	TC	.05	-.00	
IV (PPE)	.70	.21	CTC	-.08	-.01	
EF (EWE)	.63	.16	NPLS	.70	.18	
ARO (EWE & CE)	.33	.06	TY	.46	.09	
FBA (EWE)	.60	.14	WC	.72	.21	
PSP (PE)	.20	.04	IWM	.42	.07	
FDT (PE)	.43	.10	AO	.64	.16	
SC (EWE)	.65	.16	TI	.39	.08	
IV (PE)	.54	.13	ETR	.74	.23	
-	-	-	D	.15	.01	
-	-	-	AS	.02	.00	
-	-	-	SV	.62	.13	

(appendix continues)

Sector C

Sector E

Variables	Factor matrix	Factor score coefficients	Variables	Factor matrix	Factor score coefficients	Variables	Factor matrix	Factor score coefficients
ILC	.56	.08	II	.33	.05	PE	.51	.21
SE	.49	.06	OAPS	.65	.10	QCEE	.48	.19
IM	.51	.06	NCI	.38	.04	EXR	.40	.14
CA	.78	.20	ASAPS	.64	.10	OEX	.60	.29
CT	.62	.10	SAPS	.50	.66	SCP	.42	.15
FA	-.11	-.02	ANAPS	.53	.08	IJS	.54	.24
EM	.40	.04	DPS	.62	.39	SJSHO	.48	.19
JI	-.11	-.01	QBR	.14	.02	-	-	-
PTR	.66	.10	CPA	.53	.06	-	-	-
WIC	-.14	-.03	OWAJ	.32	.04	-	-	-
GC	.18	.01	S	.09	.01	-	-	-
SC	.05	.01	PI	.63	.11	-	-	-
NSA	.51	.06	PD	.46	.06	-	-	-
AAPS	.46	.05	-	-	-	-	-	-

Factors and loadings

Variables	1	2	3	4	5	6	7 ^u	8	9 ^u	10 ^u	11 ^u	12 ^u	13	14 ^u	15 ^u	16 ^u
ASAPS	.53	.06	.10	-.06	-.11	-.09	-.17	.06	-.04	.08	.04	.08	.06	.02	.08	-.15
DPS	.63	.05	.08	.08	-.13	-.05	.01	.01	-.05	-.11	.02	.03	-.06	.12	-.06	.10
NPLS	-.15	.66	.06	-.03	-.02	-.05	-.00	.01	-.04	.12	.01	.04	.07	.12	-.00	-.16
WC	.04	.80	-.03	.06	.04	.01	-.02	.03	-.04	-.05	.06	.05	-.02	.00	.11	-.04
ETR	-.05	.77	-.03	-.17	.04	.02	.01	-.02	.12	-.00	.05	-.00	.05	.03	-.07	.05
SV	.06	.56	-.01	.04	.03	-.00	.03	-.02	.18	-.06	-.08	.08	.12	-.02	-.05	-.06
OE	.09	.63	-.03	-.02	-.03	-.03	-.02	-.05	-.11	.11	.08	-.07	.25	-.16	.02	.17
FO(PPE)	.07	.04	.38	-.04	.02	.07	-.01	.12	-.02	.14	.18	.02	-.01	-.09	.02	.01
IV(PPE)	.05	-.02	.62	.00	.01	-.11	-.11	-.05	.13	-.04	-.21	.04	.01	-.04	-.08	.05
EF(EWE)	-.06	-.07	.63	.10	-.04	-.08	.02	-.07	-.03	-.03	-.09	.14	.04	.03	-.07	.07
FBA(EWE)	.00	.01	.60	.05	-.07	-.01	.08	.03	-.09	-.03	.04	-.16	.02	.24	.07	-.03
SC(EWE)	.12	.02	.66	-.09	-.07	.05	-.02	-.04	.06	.02	.06	-.05	.01	.01	.13	-.12
FA	.01	.01	.01	-.57	-.05	.09	.08	-.15	-.01	-.11	.02	-.09	-.07	.05	.02	-.07
JI	-.06	.03	-.02	-.62	.04	-.01	-.07	.08	-.07	.02	-.04	.06	.04	-.00	-.02	.05
D	-.05	.02	-.18	-.10	.68	-.07	-.11	-.19	.02	-.07	.02	.01	.16	.09	-.00	-.02

(appendix continues)

Appendix F (continued)

Factors and loadings

Variables	1	2	3	4	5	6	7 ^u	8	9 ^u	10 ^u	11 ^u	12 ^u	13	14 ^u	15 ^u	16 ^u
AS	-.06	.03	-.01	-.04	.63	.03	-.04	-.14	-.05	.02	.05	-.03	.09	.06	.09	.08
SEF(WE)	.11	.29	-.03	-.18	.16	-.52	.15	.11	.05	.02	.16	.05	-.08	.07	-.07	.09
FDT(PE)	.05	-.08	.01	.05	-.07	-.71	-.02	-.14	-.10	-.06	-.00	-.00	-.01	-.02	.05	-.12
IV(PE)	.14	.05	.14	.06	.03	-.56	-.20	.09	.07	-.05	-.14	.05	-.01	.03	-.11	.15
AAPS	.09	.00	.05	-.03	.02	-.06	-.53	.06	-.01	.09	.10	.03	-.01	-.01	-.01	.26
TC	.00	.01	-.02	.18	-.05	.01	-.04	.64	-.15	.04	.10	.05	.03	.13	.04	.10
CTC	.02	-.09	.02	-.09	-.07	.05	-.03	.59	.08	-.08	-.03	-.03	.01	-.09	.04	-.06
GC	-.03	-.02	-.08	-.08	.04	-.03	.05	.03	-.01	-.63	.06	-.01	.01	.02	.01	.03
EM	.16	.04	.11	.07	.04	.09	.03	-.03	-.05	-.02	.07	.60	.02	.06	.09	-.11
IJS	.11	.15	.05	-.30	.09	-.07	.25	.07	.09	.08	-.09	.15	.52	.03	-.05	-.07
SJSHO	-.04	.13	.04	.07	.08	.09	.00	.03	.00	-.03	.00	-.04	.61	.01	.05	.03
Unclassified items																
ILC	.10	.13	.12	.11	-.00	.16	-.14	.01	-.18	-.41	.18	.17	.04	.03	-.26	-.09
SE	.25	.09	.09	.12	-.26	.00	.04	-.24	.13	-.01	.12	.06	-.08	.34	-.15	.13
IM	.06	.03	-.01	-.08	-.48	-.07	-.17	-.13	-.05	-.02	.14	.05	.04	.17	-.05	.08
CA	.47	-.03	.13	.00	-.11	-.14	-.10	.08	.10	-.09	.14	.17	.04	.06	.02	-.03
CT	.24	.03	-.07	-.12	-.17	-.06	-.11	.07	.09	-.06	.17	.34	.07	.02	.01	.01

(appendix continues)

Factors and loadings

variables	1	2	3	4	5	6	7 ^u	8	9 ^u	10 ^u	11 ^u	12 ^u	13	14 ^u	15 ^u	16 ^u
PTR	.10	-.01	.12	-.13	-.09	-.12	-.12	-.03	.05	-.28	.17	.36	.03	.08	.09	-.14
WIC	.08	.08	.06	-.25	.19	-.11	-.12	-.13	-.09	.04	.16	-.25	.03	-.14	-.03	.13
SC	-.00	-.06	-.02	.01	-.04	.02	.01	-.03	.03	-.01	-.02	-.04	-.02	.01	-.30	-.01
NSA	.04	-.13	-.04	-.04	-.52	.01	-.18	-.08	.06	-.03	.11	-.03	.20	.31	-.02	.13
II	-.06	.20	.02	.05	.04	-.01	-.16	.10	.09	-.12	-.04	.27	-.10	.10	.03	-.17
OAPS	.29	-.02	-.03	-.09	-.04	-.12	-.39	.22	.16	-.00	.05	-.06	.05	.02	-.22	-.12
NCI	.28	.08	.04	.11	.03	-.10	.12	.20	.19	.04	.25	.07	-.12	.24	-.09	-.20
SAPS	.10	.07	.05	.05	.04	-.11	-.26	.02	.19	-.08	.03	.10	-.06	-.13	.21	-.33
ANAPS	.30	.25	.08	.12	.04	-.05	-.25	.15	-.04	-.01	-.18	.16	-.07	-.06	-.11	-.19
QBR	-.07	-.03	.03	.17	.02	.04	.01	-.01	.41	.13	.07	.08	.08	-.04	-.11	-.12
CPA	.25	-.07	.09	.02	-.09	-.05	-.13	-.01	.10	-.01	.30	.06	-.07	.20	.02	.10
OWAJ	.03	.24	-.06	.09	-.19	-.04	.13	.12	.42	-.02	.40	-.13	-.12	-.05	-.13	.06
S	-.08	.10	-.16	.00	-.12	-.17	.10	.10	-.02	.10	.02	.43	.02	-.13	-.08	.12
PI	-.08	.08	.15	-.05	-.32	.07	-.37	.03	.26	-.17	-.04	.12	.06	.15	-.14	.22
PD	.17	.13	-.03	.14	-.06	.06	-.20	.07	.32	-.09	-.08	-.04	.04	.10	-.04	.03
TS	.03	.10	.09	-.05	.04	-.26	-.07	-.00	.07	-.09	.05	.13	.08	.28	-.14	.03
RCL	.01	.22	.10	.00	.03	-.18	.07	.03	.11	-.17	.19	.09	.03	.23	-.21	.06

Factors and loadings

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variables	1	2	3	4	5	6	7 ^u	8	9 ^u	10 ^u	11 ^u	12 ^u	13	14 ^u	15 ^u	16 ^u
TY	-.06	.27	-.05	.11	-.21	-.11	-.15	.04	-.13	.01	.15	-.13	.18	.12	-.07	-.22
IMM	.12	.41	-.00	.02	-.02	-.03	-.08	-.07	.07	-.08	-.12	.02	.01	.10	.17	-.06
AO	-.09	.20	.07	-.14	.14	-.25	.17	-.03	-.06	.15	.21	.16	.20	.28	-.38	-.16
TI	.19	.00	.02	-.16	-.14	-.08	-.05	-.08	-.05	-.11	-.02	-.04	.22	.44	-.10	-.06
EPCT (PPE&PE)	.00	-.07	.33	.03	.04	-.33	-.24	.01	.06	.02	-.01	-.08	.02	.24	.15	.11
ARO (EWE&CE)	-.14	.04	.28	.01	-.06	-.18	-.00	-.01	-.06	-.19	-.06	-.02	-.01	-.17	-.01	-.08
PSP (PE)	-.10	.02	.06	.09	-.03	-.23	.13	.10	.16	-.01	.01	-.03	.01	.03	.18	-.09
QCEE	.40	-.08	.03	.07	-.07	-.08	.12	.02	-.01	-.38	.06	-.10	.27	-.02	-.14	-.02
EXR	.03	-.02	.03	-.01	.02	.04	-.09	.06	.02	-.23	.49	.10	.08	-.01	.02	-.04
OEX	.12	-.06	-.02	.01	-.09	-.12	-.09	-.11	.21	-.18	.22	.11	.32	-.07	.02	-.06
SCP	-.00	.49	.05	-.16	.06	-.05	.08	-.00	-.10	-.02	.03	.02	.26	-.16	-.05	.11
Eigen value	11.10	4.88	3.07	2.98	1.90	1.68	1.61	1.46	1.43	1.25	1.20	1.18	1.09	1.08	1.04	1.01
WIT																
% of variance	18.5	8.1	5.1	5.0	3.2	2.8	2.7	2.4	2.4	2.1	2.0	2.0	1.8	1.8	1.7	1.7
WIT																
Eigen value	10.65	4.45	2.56	2.50	1.42	1.23	1.08	0.93	0.91	0.71	0.68	0.62	0.68	0.64	0.52	0.49
IT																
% of variance	35.6	14.9	8.6	8.4	4.7	4.1	3.6	3.1	3.0	2.4	2.3	2.1	1.9	1.8	1.7	1.6
IT																

WIT = without iterations. IT = with iterations

u = Unused Factor due to high loading of only one item.

Appendix G

Summary Descriptions of the Ten Organizations in the Sample

Organization no. 1 (01)

Organization no. 1, a private sector textile manufacturing organization was established in the year 1921. There is a total of 4275 employees including 109 officers, 163 supervisors, and 161 other staff members. This organization has been the best run amongst its other comparable competitors. The plants in this organization are equipped with modern technological features. They are quite adaptive to changing systems inside as well as outside the organization. The organization claims to produce the best quality fabrics at cheapest rates. The production rate is 80 thousand meters per day. The organization's weaving machines are highly sophisticated. At present organization is facing some problems in sales and marketing. The organization is not being able to cope with these problems very efficiently, still it is trying its very best. Moreover, this organization has made a major thrust on diversification. Owing to this orientation much emphasis is being given to quality control department. In summary, this organization may be described as a private sector textile manufacturing organization which is trying to penetrate into newer product areas while attempting to maintain its stability in terms of functioning and viability.

Organization no. 2 (02)

Organization no. 2 is a private sector organization established in the year 1961. The major thrust is on synthetics yarn and fabrics. This organization is diversifying in the area of nylon yarn and fabrics, polyester yarn and fabrics, accrelic fibre, etc. They have been able to make an impact in the area of synthetics fibres. The plants are well equipped with advance modern machines and uptodate knowhow. The organization may be described as a private sector textile manufacturing organization of relatively short independent history of existence. The organization is doing rather well considering the fact that it has to operate in the high fashion market with changeable trends and preferences.

Organization no. 3 (03)

Organization no. 3, a jute manufacturing organization, was established in the year 1929 as a private owned concern and was incorporated under Indian Companies Act VII of 1913 as a private company Ltd. on March 7th, 1937. It was then converted into a public company in 1955. The history of the last 33 years is a record of cautious conservation and at the same time progressive expansion. Today the company claims to possess one of the most modern and well equipped Jute mills in India. This would be evident by the fact that the mill is now equipped with 6100 spindles, 555 looms

per shift and there are three shifts per day. The main products are Hessian, sacking bags, grain bags, and cement bags. The company has also installed broad looms and allied machinery to manufacture carpet - baking cloth for regular export to the U.S.A. The company has a total number of about 3600 employees including staff and officers. The mill is equipped with three airconditioning plants (the only jute mill to have these many). The diversification of production is widely recommended these days to keep the Jute Industry alive. The management is also conscious of the anticipated fall in demand of the traditional jute items and is considering the proposals for manufacturing laminated goods, Jute tapestry, union fabrics and other lines of production, which may be in high demand in the future. The company is also facing tough competition from the manufacturers of polythene bags. But the marked emphasis on team spirit and wholistic concern would be evident to anyone who cares to take a good look at the functioning of the company. In summary, the organization may be described as a private sector organization operating in a traditional product area but trying to diversify in face of anticipated problems that may arise due to changes in the environmental forces such as introduction of newer raw material and changing consumer preferences.

Organization no. 4 (04)

Organization no. 4, now a public sector textile manufacturing organization was established in the year 1836. It is a composite unit with the installed capacity of approximately 56, 184 spindles, and 1277 looms including 96 automatic looms and canvas looms. It is also equipped with limited processing equipment for bleaching, dyeing, printing, and raising etc. The company has remained a marginal unit for a long time and the management during the past two decades has not cared to allocate sufficient finances for replacement, rehabilitation, and modernization of the machineries. There has also been a want of proper planning. The unit is a completely sick unit under the direct control of National Textiles Corporation. At present the only objective behind running this unit seems to maintain the employees. For last two years neither promotions nor new enteries have been made. In summary, it may be described as a public sector textile manufacturing organization running in loss.

Organization no. 5 (05)

The organization no. 5, a textile mill, was established originally in 1861. It has a long history about more than hundred years. Initially it was a private company, then it converted to public limited company with a history of many ups and downs, as late as 11th June, 1931

on the share holding basis it was converted into a public sector organization. There are 9200 employees in which 1200 are the managers and the supervisors. The company manufactures cloth in the bleached, dyed, and the finished state and has got international reputation for the quality of its Turkish towels, filter cloth, mineral khaki drill, cellular, shirtings, and tentage. The plants of this organization are traditional. They are of course adopting modern technology also in certain spheres. within their limited resources they are not in a position to respond to the technological advancement rapidly. Their major thrusts are on khaki drill, turkish towels and new thrust areas are the polyester blended fabrics for which new machinery has been imported with advanced technology. This organization may be described as a public sector textile manufacturing organization operating primarily with a very limited range of products and one that has just initiated the process of upgrading its technologies.

Organization no. 6 (06)

Organization no. 6 was established in the year 1972 as a private limited company under the Act for the manufacture of highly sophisticated industrial machinery required for processing synthetic yarn. The company was converted into a public limited company in 1978. The company has entered into foreign technical collaboration

agreement in 1982 with Piaggio and C.S.P.A. of Italy who are the renowned manufacturers of Scooters in the world. Under the terms of foreign collaboration the company has introduced the latest versions of scooter using sophisticated modern technology. The company has grown rapidly, in terms of financial viability. The organization may be described as the private sector automobile manufacturing organization with a relatively short history of establishment. The organization may be said to have done rather well especially in face of the facts that it entered a scooter that had been earlier dominated by other established manufacturers and that technologically more sophisticated machines are continually invading the market. The company maintains that the success has come about largely due to strict quality control, ability to manage well and a desire to provide the consumers better machines at competitive terms.

Organization no. 7 (07)

Organization no. 7 was set up in the year 1972 to meet the demand and supply gap of 2 wheelers in the Indian market. The company is a public sector organization. It has been incurring losses ever since its inception, however, the situation had deteriorated to the worse in last 2 - 3 years. The blame is put on the the fact, by organization, that the two wheeler market had become extremely competitive with several new manufacturers entering the field and that newer

brands of efficient scooters, mopeds, and motor-cycles with latest technology have entered the market. The company is facing problems because of having the most obsolete plant and technology. The only area in which the unit has been successful to some extent is the production of a well known 'three wheeler' autorickshaw. The organization may be described as the public sector automobile manufacturing organization with a relatively short history of establishment. The organization has run into deep problems despite the fact that the entire original equipments were imported and the costs were met by the government.

Organization no. 8 (08)

The organization no. 8 was established on 3rd November, 1967 as a multi-unit cooperative organization with broad objectives of augmenting fertilizer production, ensuring fertilizer availability at farmers' door- steps, strengthening cooperative fertilizer distribution system and educating, training, and guiding the farmers for improving agriculture productivity.

This unit started commercial production in March, 1981. This unit is a modern fertilizer complex having a 900 TPD Ammonia plant and a 1500 TPD Urea plant. A steam and power plant is provided to meet the requirements of main process units. The main thrust of this organizations' activities is on increasing agricultural productivity through balanced

fertilization and transfer of modern agriculture technology. It's innovative approach has given a new dimension to agriculture by which the benefits of development percolate to the grass-root level. It is selling fertilizers only through cooperative channels with about 32,000 retail outlets spread all over the country. In summary, this organization may be described as a cooperative sector fertilizer manufacturing organization which is doing rather well in almost its professed activities. It may be pointed out that although technically this is a cooperative sector organization, it was clubbed together with the public sector organizations in the dichotomous sampling scheme of this study taking either public or private sector organizations only. The reasons for this were (a) that the government has the largest share holding, (b) that the organization largely follows the guidelines of the Bureau of Public Enterprises, and (c) that the Chairman is a government nominee.

Organization no. 9 (09)

It is a public sector organization. Main unit of production is television (TV) sets and other electronic systems like digital phones etc. It has separate units for each of its products for example black and white TV unit is separate from colour TV unit. Data for this research were collected primarily from the colour TV unit. The unit was established in 1983. Initially there were about thirty

or forty people employed in the Entire TV unit. Production was about 10 TV sets per day. At present the number of employees in TV units would be around one thousand and specifically in colour TV unit this number would be around three hundred. The production in colour TV unit at present is about 100 + sets per day. Colour TV unit has also been awarded by the ministry of science and technology for its efforts in producing indigenous TV. The unit imports vital parts such as colour picture tube, and rest of parts are made and assembled in India. Its collaboration is with Toshiba Company of Japan. Their major thrust areas are as follows. (a) input substitution i.e., to prepare an effective substitute of colour picture tube, and (b) innovation of line Output Transformation (LOT). Although this second area has resulted in a failure, still the unit is making efforts in positive direction. They are operating in a highly competitive market using high technology. They are planning to give the consumers high tech. products made largely with the indigenous knowhow, and at an affordable price. In summary this organization may be described as a public sector electronics manufacturing organization operating in a high tech; competitive environment with emphasis on indigenization and yet doing well.

Organization no. 10 (010)

The organization no. 10 was established in 1973. It is a public sector organization and fully dedicated to meet the defense needs. The organization has collaborated with British, French, and Russian leading aerospace equipment manufacturers. The organization has been able to make an impact in the areas of manufacturing aircraft hydro-mechanical, electrical, electronic instrument systems. The plants are well equipped with modern machines and facilities in the concerned areas of production. The organization may be described as the public sector aviation equipment manufacturing organization catering primarily to the defense services of the country, and consequently having a stable domestic market with virtually no competition.

